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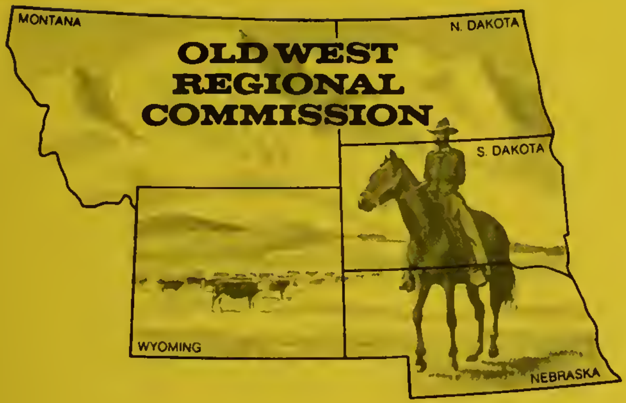

ENERGY RESEARCH INFORMATION SYSTEM

Quarterly Report

Vol. 1, No. 3
May 1976

A Joint Program of:

The Old West Regional Commission
and
USDA Forest Service, Surface
Environment and Mining

Billings, Montana

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PROGRAM

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ENERGY RESEARCH INFORMATION SYSTEM

QUARTERLY REPORT

Vol. 1, No. 3

Old West Regional Commission
and
USDA Forest Service, Surface Environment and Mining

Billings, Montana
May 1976

Prepared by:

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Information Specialists
Old West Regional Commission
Billings, Montana 59101

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INTRODUCTION

The Energy Research Information System (ERIS) is a cooperative program of the Old West Regional Commission (OWRC) and the U.S. Forest Service, Surface Environment and Mining (SEAM). The Old West Regional Commission is a Federal-State partnership whose function is to stimulate programs for orderly economic growth and development in the states of Montana, Nebraska, North Dakota, South Dakota, and Wyoming. Established in 1972 under the Public Works and Economic Development Act of 1965, it is one of seven such Commissions in the United States. Its offices are located in Washington, D.C., Rapid City, South Dakota, and Billings, Montana. The SEAM program provides and applies technology in order to maintain or restore the quality of the environment and surface values of forest and rangelands subject to mining. The SEAM office is also located in Billings, Montana.

The objective of ERIS is to compile and make available to the energy research users of the Region an up-to-date inventory of ongoing and recently completed energy-related research projects. By providing researchers with a means of communication with other researchers and allowing government and policy decision-makers access to Regional energy research, ERIS aims to improve communication channels among energy research users. Use of the system can be an aid in avoiding research duplication and pinpointing areas of additional research need.

ERIS Scope

The term "energy-related" covers a broad spectrum of activities and encompasses a large volume of research. Nonetheless, ERIS attempts to report energy-related research projects in as comprehensive a manner as possible. This includes reclamation, energy conversion, and land use research, socioeconomic impact and alternate energy resource studies, as well as programs related to energy development which do not necessarily involve research.

The geographic focus of ERIS is upon research conducted in the Old West Region. Research outside of the Region is included when it is offered by the reporting agency as being applicable to research efforts or developments within the Region.

The first Quarterly Report of system holdings was issued November, 1975. It contains abstracts of 300 energy-related research projects. Subsequent Quarterly Reports serve not only to update the system on newly funded projects, but also to fill in the gaps on ongoing and recently completed projects not previously reported.

The compilation of energy research projects in the Quarterly Reports has been accomplished by combining ERIS's own information-gathering efforts with those of other clearinghouses - most notably, the Oak Ridge National Laboratory's *Inventory of Current Energy Research and Development,* the Smithsonian Science Information Exchange, the Montana Energy Advisory Council, and the other various energy agencies of Wyoming, North Dakota, Nebraska, and South Dakota.

Use of the ERIS Quarterly Report

Chapter Breakdowns

The research projects included in the Quarterly Reports are categorized by broad subject areas, or chapters. For example, coal research is broken down into eight chapters dealing with specific subjects such as Reclamation, Water Resources, and Social and Economic Studies.

Indexes

In addition, further access is provided by four indexes - location, personal name, organization, and subject. The following are suggestions which may help you in the use of the indexes:

The Location Index utilizes the 2-letter abbreviations for states' names, i.e. MT for Montana, WY for Wyoming, and so forth.

The Personal Name Index contains the personal names of the investigators, supervisors, project monitors, and authors of publications for each project.

The Organization Index contains uniform names of all organizations included in the main body of ERIS. Government agencies listed in the Organization Index are prefaced by the organization's affiliation, for example, *South Dakota* Office of Energy Policy, and *U.S.* Forest Service, Surface Environment and Mining.

The Subject Index is the keyword list that is also used in conducting computer searches. If a user wishes to conduct a manual search of the system using the Subject Index, it is recommended that a combination of general and specific terms be used. As an example, if the user is trying to identify all projects on the effects of mining on the rangeland environment, the user should consult *range ecosystems* but may find additional references under the broad term *bioenvironment*. In addition to subject terms, the Subject Index contains specific program names, such as *Project Lignite*, and location names, such as *Powder River Basin*.

Amendments

Quarterly Reports subsequent to the first issue contain an Amendments chapter when significant changes in project descriptions have been reported. If reported by information contributors, this chapter also serves as a notice of completed research projects in which reports and publications are available.

Computer Search Service

The holdings of ERIS are computerized, allowing for flexibility in conducting special searches of the data file. Each of the data categories in the Reporting Form (reproduced on the following pages) or any combination of categories can be used to formulate a computer search. Subject searches can be conducted using assigned *keywords* and by scanning the abstract and title on a *free text* basis.

The computer search service is offered as a complement to the Quarterly Reports. If your inquiry concerning energy research cannot be answered by manual use of the Quarterly Report, contact a member of the ERIS staff and request that a computer search be conducted. The time involved in performing the search, compiling the projects and mailing is anticipated to be two weeks.

* * * * * * * * *

Please direct your inquiries to ERIS, Old West Regional Commission, Fratt Bldg., Suite 306A, Billings, Mt 59101.
406-245-6711 x6665 (commercial)
585-6665 (FTS)

REPORTING FORM:
ENERGY RESEARCH INFORMATION SYSTEM
Old West Regional Commission

Date ____________________

Respondent:

Please complete the relevant categories of the Reporting Form for each energy-related project currently being conducted or recently completed by your organization. If an umbrella project covers several separate studies, fill out a form for each one, as well as for the umbrella project. If you want any of the information you provide to be omitted from Information System publications, make a note of this in Category 16, "Special Instructions for Proprietary Information."

In order to assist us in assigning keywords for computer access to your research information, we ask that you circle the most descriptive words and phrases of the Title and Abstract. Suggest additional terms in Category 14, "Abstract," as you deem necessary.

If you are amending previously submitted information, please note this on the Reporting Form.

PLEASE RETURN COMPLETED REPORTING FORM(S) TO: Beth Givens, Old West Regional Commission, Fratt Bldg. 306A, Billings, MT 59101. If you have questions or need additional Reporting Forms, please contact us. Our phone number is: 406-245-6711 x6665 (commercial) or 585-6665 (FTS).

We sincerely appreciate your cooperation in this effort.

---

1. KW (please leave blank)

2. Project/Program Title (please circle key words) ____________________

3. Project/Program Number (descriptive no. used by your organization) ____________________

4. Principal Investigators (include organization name & address if different from 5 below)

Investigator ____________________ Phone Number ______ ____________

Organization ____________________

Address ____________________

Investigator ____________________ Phone Number ______ ____________

Organization ____________________

Address ____________________

5. Project Supervisor (individual and organization which oversee all facets of project or program through its completion)

Supervisor ____________________ Phone Number ______ ____________

Organization ____________________

Address ____________________

6. Other Coordinating and Cooperating Organizations

Coordinator (organization whose function is to coordinate research of other entities by subcontracting and/or supervising said research; does not provide primary source funding and may or may not conduct the research itself)

Project Monitor ______________________________ Phone Number______ __________

Organization ____

Address ____

____

Cooperator(s) (organization(s) which provide(s) time and/or resources toward the project but does not conduct, supervise, or fund the research)
Please provide organization name(s) below:

7. Primary Sponsor (organization which provides funds)

Project Monitor ______________________________ Phone Number______ __________

Organization ____

Address ____

____

8. Secondary Sponsor

Project Monitor ______________________________ Phone Number______ __________

Organization ____

Address ____

____

9. Primary Funding Amount (please complete A and, *if applicable*, one section of B)

A. Total amount: $__________ for ______ yrs. ______ mos.

B. Amount per year: $__________ per yr. for ______ yrs. beginning _____ _____ _____
mo. day yr.

OR $__________ for the yr. ________ $__________ for the yr. ________

$__________ for the yr. ________ $__________ for the yr. ________

10. Secondary Funding Amount (please complete A and, *if applicable*, one section of B)

A. Total amount: $__________ for ______ yrs. ______ mos.

B. Amount per year: $__________ per yr. for ______ yrs. beginning _____ _____ _____
mo. day yr.

OR $__________ for the yr. ________ $__________ for the yr. ________

$__________ for the yr. ________ $__________ for the yr. ________

11. Time Frame: Starting Date ____ ____ ____ Ending Date ____ ____ ____
mo. day yr. mo. day yr.

12. Status: Actual Completion Date of Project (leave blank if not completed)

____ ____ ____
mo. day yr.

13. Location: States and, *if appropriate*, Region, River Basin, Counties, Cities, Township/Range/Section, etc.

States ______________________________

Other ______________________________

14. Abstract: Problem, Objectives, and Approach (in free form, 300 words maximum) *PLEASE CIRCLE KEY WORDS AND PHRASES. Add additional terms as you deem necessary.*

15. Reports and Publications of This Study Available to the Public (title, authors, report number, date, issuing agency, and where report can be obtained)

16. Special Instructions for Proprietary Information (enter category number and information which you desire to be omitted from published materials)

17. Type of Study (please check all that apply)

- I. ☐ Primary Data Sources
  - A. ☐ Field Study
  - B. ☐ Lab. Study
  - C. ☐ Both A and B
- II. ☐ Secondary Data Sources
- III. ☐ Both I and II
- IV. ☐ Program Not Involving Research (for example, an energy-related community assistance program)
- V. A. ☐ The study described on this Reporting Form is an umbrella project or program. It encompasses two (2) or more separate studies which are subcontracted and/or of differing subject content. *(Please provide Reporting Forms for the separate projects* *or* *incorporate them onto this Reporting Form.)*
  - B. ☐ The study described on this Reporting Form is a part of an umbrella project or program entitled:

    ____

    ____

    (The Cooperator is recorded in Category 6, above.)
  - C. ☐ The study is a separate project or program in and of itself.

Thank you for completing this Reporting Form. Please call or write if you have questions.

ENERGY RESEARCH INFORMATION SYSTEM

*****

00000394
PROJECT TITLE:
LIGNITE RESERVES IN HARDING COUNTY, SOUTH DAKOTA
PROJECT NUMBER:
75-C0131
PROJECT SUPERVISOR:
JACK A. PEDDEN
SOUTH DAKOTA SCHOOL OF MINES & TECH.
RAPID CITY, SOUTH DAKOTA 57701
PRIMARY SPONSOR:
U.S. BUREAU OF MINES
DOSS H. WHITE, JR.
BLDG. 20, DENVER FEDERAL CENTER
DENVER, COLORADO 80225
PRIMARY FUNDING AMOUNT:
16,998
TIME FRAME:
03 31 76 TO 03 31 77
LOCATION:
SD - HARDING CO.
ABSTRACT:
HARDING COUNTY CONTAINS AN ESTIMATED 85 PERCENT OF THE LIGNITE IN SOUTH DAKOTA BUT THE PREVIOUS LACK OF BASE MAPS HAS NOT PERMITTED DETAILED EVALUATION OF THE RESERVES RELATIVE TO DEPTH OF COVER AND THICKNESS OF THE DEPOSITS. THESE WILL BE EVALUATED THROUGH THE PREPARATION OF OUTCROP MAPS, STRUCTURAL CONTOUR MAPS, OVERBURDEN MAPS, AND STUDIES OF THE STRATIGRAPHIC RELATIONSHIPS. EXISTING ANALYSES AVAILABLE FROM URANIUM EXPLORATION AND NEW ANALYSES FROM CORES IN UNEXPLORED AREAS WILL BE USED TO DEFINE THE QUALITY OF THE LIGNITE IN DIFFERENT RESERVE CATEGORIES. RESERVE DATA IN VARIOUS CATEGORIES WILL BE PREPARED IN FORMAT COMPATIBLE WITH U.S. BUREAU OF MINES REQUIREMENTS.

*****

00000395
PROJECT TITLE:
GEOLOGY AND MINING OF COAL RESERVES
INVESTIGATORS:
W. D. ARMS
RESEARCH INSTITUTION:
C. PATTON & ASSOC.
ROCK SPRINGS, WY 82901
PRIMARY SPONSOR:
IDAHO POWER CO.
PRIMARY FUNDING AMOUNT:
PROPRIETARY
TIME FRAME:
01 01 74 TO INDEFINITE
LOCATION:
WY
ABSTRACT:
THIS PROJECT IS BEING SPONSORED TO RESEARCH THE APPLICABLE MINING LAWS TO ESTABLISH THE COAL RESERVES AND TO DETERMINE THE GEOLOGY OF THE AREA PRIOR TO MAKING APPLICATION FOR THE MINING LEASES. IT IS TO DETERMINE METHODS OF MINING AND RECLAMATION TO COMPLY WITH FEDERAL AND STATE STATUTES.

*****

00000396
PROJECT TITLE:
REGIONAL STUDIES
PROJECT NUMBER:
001350
INVESTIGATORS:
D. W. WILSON
RESEARCH INSTITUTION:
U.S. ERDA, LAWRENCE LIVERMORE LAB.
LIVERMORE, CA
PRIMARY SPONSOR:
U.S. ERDA
PRIMARY FUNDING AMOUNT:
1975 - 191,000
TIME FRAME:
FY 74 TO FY 75
LOCATION:
CA AZ MT IL WY
ABSTRACT:
IN LATE FY 1974, ACTIVITIES WERE INITIATED TOWARD DEVELOPING A PROGRAMMATIC AREA THAT ADDRESSES THAT APPLICATION OF METHODOLOGIES IN DATA-ACQUISITION, MODELING, AND ANALYSIS AND EVALUATION TO REGIONAL ENERGY STUDIES. PLANS ARE IN DEVELOPMENT FOR A FY 1975 PROGRAM. IN THIS AREA, JOINT STUDIES ARE BEING PLANNED WITH ARGONNE NATIONAL LABORATORY IN EVALUATING THE REGIONAL ENVIRONMENTAL, SOCIOECONOMIC, AND HEALTH CONSEQUENCES OF EXTRACTION, SITING, AND WASTE MANAGEMENT ASSOCIATED WITH THE COAL FUEL CYCLE IN THE WESTERN STATES. THE PROGRAM WILL RELY HEAVILY UPON THE ONGOING RESEARCH PROGRAMS FOR DATA AND MODELS AND WILL UTILIZE NEW RESEARCH INFORMATION AS IT APPEARS. IT IS ANTICIPATED TO PROVIDE, WITHIN TWO YEARS, A COMPREHENSIVE SET OF TESTED METHODOLOGIES THAT CAN BE APPLIED TO ELUCIDATE THE CONSEQUENCES OF THE OPTIONS ASSOCIATED WITH SITING OF POWER STATIONS, RECLAMATION TECHNIQUES, AND OTHER FEATURES. STUDIES WILL BE CARRIED OUT IN THREE WELL CHOSEN SUBREGIONS IN THE SOUTHWEST, THE INTERMOUNTAIN AREA, AND

THE SOUTHERN ILLINOIS COAL FIELDS. A PROGRAM WILL BE INITIATED TO DEVELOP AN ENERGY-BASED ENVIRONMENTAL IMPORT MODEL OF THE CALIFORNIA CENTRAL VALLEY. THE GOAL OF THIS STUDY WILL BE TO QUANTIFY THE INTERACTIONS OF AGRICULTURE, MINING AND INDUSTRY, TRANSPORTATION, URBANIZATION, IMPORTED POLLUTION FROM THE COASTAL AREA, AND ELECTRIC POWER GENERATION, AS THESE ACTIVITIES INFLUENCE ENVIRONMENT AND HEALTH IN THE DEVELOPING CALIFORNIA CENTRAL VELLEY. A PROGRAM OF DATA ACQUISITION AND REDUCTION WILL BE INITIATED TOWARD PROVIDING A COMPUTER-CODED INVENTORY OF ENVIRONMENTAL DATA, ONGOING RESEARCH ACTIVITIES, AND UTILIZATION OF THE SACRAMENTO RIVER DELTA AND SAN FRANCISCO BAY. THIS SYSTEM WOULD BE A USEFUL TOOL FOR KEEPING TRACK OF THE ENVIRONMENTAL QUALITY OF THIS REGION, THE INFLUENCE UPON IT, AND THE COORDINATION OF RESEARCH AND ACTIVITIES BETWEEN A LARGE NUMBER OF AGENCIES. THIS RESEARCH IS DIVIDED INTO THREE REGIONAL PROJECTS.: 1. ENVIRONMENTAL, HEALTH, AND SOCIOECONOMIC CONSEQUENCES OF EXTRACTION AND UTILIZATION OF COAL IN THE WESTERN STATES. 2. COMPREHENSIVE ENERGY-BASED ENVIRONMENTAL QUALITY MODEL OF THE CALIFORNIA CENTRAL VALLEY. 3. DATA ACQUISITION, MANAGEMENT, AND EVALUATION OF ENVIRONMENTAL IMPACTS AND RELEVANT ACTIVITIES IN THE SAN FRANCISCO BAY AND DELTA REGIONS.

*****

0000397
ROJECT TITLE:
TERTIARY HISTORY - MIDDLE ROCKY MOUNTAINS
ROJECT NUMBER:
9440-00174
NVESTIGATORS:
N. M. DENSON
ESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
DENVER, CO 80225
RIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
IME FRAME:
07 01 74 TO 06 30 75
OCATION:
WY MT CO NE
BSTRACT:

STATES TO WHICH PROJECT PERTAINS: WYOMING, COLORADO, NEBRASKA, AND MONTANA.
OBJECTIVES: 1. TO ASSEMBLE AND SYSTEMATICALLY COMPILE INFORMATION OF THE THICKNESSES, LITHOLOGY, STRUCTURE, PALEONTOLOGY, MINERALOGY, AND GEOCHEMISTRY OF TERTIARY SEDIMENTARY ROCKS WITHIN THE MIDDLE ROCKY MOUNTAINS AND NORTHERN GREAT PLAINS AND TO RECONSTRUCT INSOFAR AS POSSIBLE THE GEOLOGIC HISTORY OF THE REGION DURING THIS PERIOD WITH PARTICULAR REFERENCE TO STRUCTURAL DEVELOPMENT. 2. TO APPRAISE THE USEFULNESS OF MINERALOGIC AND CHEMICAL CHARACTERISTICS TO SUPPLEMENT PALEONTOLOGIC DATA IN STRATIGRAPHIC CORRELATION OF THESE ROCKS.
CURRENT ACTIVITIES: CONTINUED STUDY OF TERTIARY SEDIMENTARY ROCKS RELATING TO URANIFEROUS SANDSTONE DEPOSITS AND COAL IN THE POWDER RIVER BASIN OF EASTERN WYOMING AND SOUTHEASTERN MONTANA.

*****

00000398
PROJECT TITLE:
COAL GEOLOGY OF THE NORTHERN POWDER RIVER BASIN, WYOMING & MONTANA
PROJECT NUMBER:
9420-01079
INVESTIGATORS:
W. J. MAPEL
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY
DENVER, CO 80225
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
WY MT
ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: WYOMING AND MONTANA.
THE POWDER RIVER BASIN OF WYOMING AND MONTANA CONTAINS MUCH OF THE MINABLE LOW-SULFUR COAL RESOURCES OF THE UNITED STATES. THIS PROJECT WILL PROVIDE DETAILED COAL RESOURCE AND STRATIGRAPHIC INFORMATION IN SELECTED AREAS IN WHICH LITTLE MODERN INFORMATION IS AVAILABLE AND WHICH ARE VITAL TO OUR UNDERSTANDING OF THE TERTIARY COAL-BEARING ROCKS AND OF THE MAGNITUDE AND MAKE-UP OF THE TOTAL COAL RESOURCES OF THE AREA.

*****

00000399
PROJECT TITLE:
RESEARCH ON GEOLOGIC ANALYSIS OF SELECTED COAL MODEL AREAS
PROJECT NUMBER:
9420-01390 (USGS)
INVESTIGATORS:
E. R. LANDIS
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.

DENVER, CO 80225
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
MT WY UT
ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: MONTANA, WYOMING, UTAH. THE PROJECT OBJECTIVES ARE RESEARCH INTO 1. THE ACQUISITION AND EVALUATION OF THE GEOLOGICALLY SIGNIFICANT INFORMATION ABOUT AREAS THAT ARE GEOLOGIC MODELS OF POTENTIAL SITES FOR THE COAL MINES THAT WILL PROVIDE THE ENERGY FOR THE COAL REFINERY AND POWER PLANT OPERATIONS OF THE FUTURE, AND 2. THE BEST MANNER AND FORM IN WHICH TO PRESENT THE RESULTING INFORMATION SO AS TO BE OF MAXIMUM BENEFIT TO THE LARGEST NUMBER OF POTENTIAL USERS.

RESOURCE STUDIES INVOLVE PRIMARILY COST BUT INCLUDE AS INTEGRAL PARTS OF THE PROGRAM INVESTIGATION OF WATER RESOURCES AND RESOURCES OF COMMODITIES THAT ARE ASSOCIATED WITH COAL-BEARING SEQUENCES, SUCH AS CLAYS, OR THAT RESULT FROM PROCESSES, SUCH AS METALLIFEROUS ASH.

AN IMPORTANT PART OF THE PROGRAM WILL BE THE DEVELOPMENT OF DETAILED INFORMATION USEFUL FOR EVALUATING THE SOCIAL, ENVIRONMENTAL, AND ECONOMIC COSTS OF INCREASED COAL USE IN THE U.S.

*****

00000400
PROJECT TITLE:
TRACE ELEMENT GEOCHEMISTRY RELATED TO COAL MINING USAGE AND DISPOSAL
PROJECT NUMBER:
9420-01536
INVESTIGATORS:
P. ZUBOVIC
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
12201 SUNRISE VALLEY DR.
HERNDON, VA 22092
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
MT WY WA KY MD
ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: KY, WY, MT, MD, AND WA WILL BE WORKED ON THIS YEAR. OTHER COAL PRODUCING STATES WILL BE COVERED IN SUBSEQUENT YEARS. THIS PROJECT IS CONCERNED WITH THE GEOCHEMICAL PRINCIPALS ON TRACE ELEMENT DISTRIBUTION TO THE MINING, USAGE, AND DISPOSAL OF COAL AND ITS BYPRODUCTS. WITHIN THE NEXT SEVERAL YEARS 10-12 COAL BURNING UTILITIES AND SEVERAL COAL CONVERSION FACILITIES IF IN OPERATION WILL BE UNDER STUDY. A DETAILED STUDY WILL BE MADE OF ALL COALS USED IN THESE FACILITIES. THESE STUDIES WILL INCLUDE THE DETERMINATIONS OF THE MINERAL-ORGANIC ASSOCIATION OF THE ELEMENTS, AND THEIR DISTRIBUTION THROUGHOUT THE BEDS. THESE DATA WILL THEN BE RELATED TO THE FATE OF THESE ELEMENTS WHEN THE COAL IS BURNED OR CONVERTED TO OTHER FUELS. ALL RANKS OF COAL WILL BE STUDIED.

*****

00000401
PROJECT TITLE:
ORIGIN OF LOW-SULFUR COAL
PROJECT NUMBER:
9420-01388
INVESTIGATORS:
Z. S. ALTSCHULER
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
12201 SUNRISE VALLEY DR.
HERNDON, VA 22092
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
ND SD GA LA FL
ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: FL, GA, THE DAKOTA'S, AND LA

THE OBJECTIVE OF THIS PROGRAM IS: 1. TO MAP THE OCCURRENCE AND DETERMINE THE GEOLOGIC HISTORY OF PEAT AND OTHER LATE CENOZOIC SEDIMENTS IN THE EVERGLADES AND OTHER COASTAL SWAMPS, AND TO ESTABLISH: A. THE GEOMORPHIC AND HYDROLOGIC CONTROLS ON THE ACCUMULATION OF VARIOUS KINDS OF PEAT; B. THE BROAD GEOCHEMICAL FEATURES, THE COMPOSITIONAL VARIATIONS OF PEAT AND ASSOCIATED SEDIMENTS, AND THE AREAL DISTRIBUTION OF CHEMICAL AND MINERALOGICAL VARIATIONS; C. THE CONTENTS OF SULFUR IN THE WATERS AND PEAT, THE RELATIVE IMPORTANCE OF THE VARIOUS FORMS OF SULFUR (INORGANIC, ORGANIC, SULFIDE, SULFATE) IN PEAT OF DIFFERENT ORIGINS AND GEOMORPHIC DOMAIN, AND THE TRANSFORMATIONS AMONG THESE FORMS IN RELATION TO BURIAL, MINERALIZATION OF PLANT TISSUE, AND CHEMISTRY OF THE BASIN WATERS; D. TO TRANSFER THE KNOWLEDGE GAINED FROM SWAMP STUDIES TO LIGNITE DEPOSITS OF THE COASTAL PLAINS AND THE

DAKOTAS AND THEN TO THE OTHER RANKS OF COAL SO THAT A COMPLETE UNDERSTANDING OF COAL FORMATION IS GAINED. SUCH DATA MAY PROVIDE EXPLORATION AND PREDICTIVE MODELS FOR LIGNITES AND LOW-SULFUR COALS IN OLDER BASINS.

*****

0000402
ROJECT TITLE:
ORGANIC GEOCHEMISTRY OF COAL
ROJECT NUMBER:
9420-01525 (USGS)
NVESTIGATORS:
I. A. GREGER
ESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
12201 SUNRISE VALLEY DR.
HERNDON, VA 22092
RIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
IME FRAME:
07 01 74 TO 06 30 75
OCATION:
ND IL FL GA
STRACT:

STATES TO WHICH PROJECT PERTAINS: FL, GA, IL, ND.
STUDY OF THE FATE OF PLANT COMPONENTS, SUCH AS CELLULOSE, LIGNIN, PROTEINS, LIPIDS, WAXES, AND PIGMENTS, FOLLOWING THEIR DEPOSITION IN PEAT-FORMING ENVIRONMENT AND IN RELATION TO THE ORIGIN OF HUMIC SUBSTANCES. PARTICULAR ATTENTION IS BEING DIRECTED TO THE MANNER IN WHICH NITROGEN AND SULFUR ARE INTRODUCED INTO AND RETAINED BY PEAT, AND THE FATE OF THESE ELEMENTS WITH THE CONVERSION OF PEATS INTO COALS OF HIGHER RANK. OTHER STUDIES ARE CONCERNED WITH: 1. THE MECHANISM OF OXIDATION OF COAL; 2. THE INTRODUCTION OF NEW FUNCTIONAL GROUPS INTO LIGNITE THAT WILL PERMIT A MORE THOROUGH ANALYSIS OF THE STRUCTURE OF THAT COAL AND COALS OF HIGHER RANK; AND 3. THE INTERACTION OF COAL WITH HYDROGEN SULFIDE UNDER MILD CONDITIONS TO PERMIT A DETAILED STUDY OF THE FORMS OF ORGANIC SULFUR IN COAL.

*****

000403
ROJECT TITLE:
POTENTIAL AGRICULTURAL ADJUSTMENTS TO LAND AND WATER REQUIREMENTS FOR COAL-ENERGY DEVELOPMENT IN WYOMING'S POWDER RIVER BASIN
OJECT NUMBER:
A-021-WYO (OWRT)
INVESTIGATORS:
C. PHILLIPS
RESEARCH INSTITUTION:
UNIV. OF WYOMING, WATER RESOURCES RESEARCH INST.
P.O. BOX 3038, UNIV. STATION
LARAMIE, WY 82070
PRIMARY SPONSOR:
U.S. DEPT. OF INTERIOR, OFFICE OF WATER RESEARCH & TECH.
PRIMARY FUNDING AMOUNT:
FY 76 - 7,150
TIME FRAME:
07 01 75 TO 06 30 76
LOCATION:
WY
ABSTRACT:

THE OBJECTIVE OF THIS PROPOSAL IS TO DETERMINE THE RANGE OF IMPACTS ON AGRICULTURE FROM COAL-ENERGY DEVELOPMENT IN WYOMING'S POWDER RIVER BASIN. THE BASIN HAS TRADITIONALLY BEEN DEPENDENT UPON AN AGRICULTURE BASED ECONOMY. LAND SURFACES TO BE DISRUPTED BY MINING ACTIVITIES AND THE ASSOCIATED PROCESSING AND TRANSPORTATION FACILITIES WILL TAKE LAND THAT, WITH FEW EXCEPTIONS, HAS BEEN IN AGRICULTURAL USE. COAL-ENERGY WATER REQUIREMENTS HAVE A GREATER POTENTIAL IMPACT ON AGRICULTURE THAN THE LAND REQUIREMENTS HOWEVER. THIS STUDY WILL SEEK TO IDENTIFY THE KINDS OF AGRICULTURAL ADJUSTMENTS THAT WILL OCCUR AND TO MEASURE THE EFFECT OF THESE ADJUSTMENTS ON THE ECONOMY AND STRUCTURE OF THE BASIN.

*****

00000404
PROJECT TITLE:
COAL RESOURCES ROCK SPRINGS UPLIFT
PROJECT NUMBER:
9420-01091
INVESTIGATORS:
H. W. ROEHLER
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
DENVER, CO 80225
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
WY CO
ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: WY AND CO.
THE PROJECT WILL LOCATE AND EVALUATE COAL AND OTHER MINERAL DEPOSITS, MAKE DETAILED STUDIES OF TERTIARY AND CRETACEOUS STRATIGRAPHY AND STRUCTURE, AND MAP THE GEOLOGY

OF THE AREA ON 7 1/2-MINUTE QUADRANGLES.

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00000405
PROJECT TITLE:
ENVIRONMENTAL ASPECTS OF COAL DEVELOPMENT, EASTERN POWDER RIVER BASIN, WYOMING
PROJECT NUMBER:
9530-01565
INVESTIGATORS:
W. R. KEEFER
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
DENVER, CO 80225
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
WY
ABSTRACT:
STATES TO WHICH PROJECT PERTAINS: WY.
PRIMARY OBJECTIVE OF PROJECT IS TO ACQUIRE, COMPILE, AND INTERPRET BASIC LAND AND RESOURCE DATA FOR ENVIRONMENTAL IMPACT EVALUATION OF LARGE-SCALE SURFACE MINING OF THE THICK WYODAK-ANDERSON COAL BED ALONG THE EASTERN MARGIN OF THE POWDER RIVER BASIN IN WYOMING.

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00000406
PROJECT TITLE:
COAL GEOPHYSICS RESEARCH
PROJECT NUMBER:
9790-01527
INVESTIGATORS:
W. P. HASBROUCK
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
DENVER, CO 80225
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 75 TO 06 30 76
LOCATION:
WY CO
ABSTRACT:
STATES TO WHICH PROJECT PERTAINS: WY AND CO.
WITH THE EVER INCREASING DEMANDS BEING PLACED UPON COAL AS A SOURCE OF ENERGY, SPECIFIC DATA ON THE LOCATION, QUANTITY, AND QUALITY OF COALS BECOMES VITALLY IMPORTANT. THE PRIMARY OBJECTIVE OF THIS PROJECT IS TO DEVELOP GEOPHYSICAL METHODS TO ASSIST COAL GEOLOGISTS TO PROVIDE THIS INFORMATION. FIVE TASKS HAVE BEEN SELECTED FOR INITIAL STUDY: 1. INVESTIGATION OF THE APPLICABILITY OF OIL EXPLORATION GEOPHYSICAL METHODS TO COAL EXPLORATION, 2. USE OF SEISMIC SEAM WAVES TO ASCERTAIN CONTINUITY OF COAL SEAMS - AN ABSOLUTE REQUIREMENT BEFORE IN-SITU GASIFICATION OR LIQUEFACTION ARE INITIATED, 3. PRECISE LOCATION OF ABANDONED COAL-MINE WORKING THROUGH USE OF SEAM-WAVE AND SHEAR-WAVE SEISMIC TECHNIQUES. OLD MINES CONSTITUTE A HAZARD TO NEW MINING OPERATIONS, BOTH STRIPPING AND UNDERGROUND; AND SOME OLD MINES ARE SOURCES OF POLLUTING WATERS, 4. USE OF GRAVITY AND MAGNETIC METHODS OF EXPLORATION GEOPHYSICS TO MANY STRIPPABLE COALS SO THAT THEIR RESERVES MAY BE BETTER ESTIMATED, AND 5. DEVELOPMENT OF BOREHOLE LOGGING METHODS NOT ONLY TO PRECISELY LOCATE COALS BUT ALSO TO DETERMINE THEIR QUALITY IN PLACE, SPECIFIC PARAMETERS OF INTEREST BEING SULFUR, ASH, BTU, AND WATER CONTENT.

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00000407
PROJECT TITLE:
EXTENSIVE UTILIZATION OF LIGNITE IN THE WEST RIVER DIVERSION AREA
INVESTIGATORS:
A. G. FLETCHER
RESEARCH INSTITUTION:
UNIV. OF NORTH DAKOTA, DEPT. OF CIVIL ENG.
GRAND FORKS, ND 58201
PRIMARY SPONSOR:
NORTH DAKOTA STATE WATER COMMISSION
PRIMARY FUNDING AMOUNT:
1975 - 73,954
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
ND
ABSTRACT:
THE STRIPPABLE LIGNITE RESERVES IN THE 14 COUNTIES COMPRISING THE WEST RIVER DIVERSION AREA ARE ESTIMATED TO BE ABOUT 12 BILLION TONS BASED ON THE BEST GEOLOGICAL INFORMATION AVAILABLE. HOWEVER, THESE ESTIMATES ARE GENERAL, AND DETAILED EXPLORATION AND DRILLING ARE NECESSARY TO PINPOINT AND DELINEATE ACTUAL LOCATIONS. BASED ON GENERAL ESTIMATES FOR A MODEL MINE, COST OF MINING LIGNITE IS BETWEEN $2 AND $3 PER TON, DEPENDING ON SIZE OF MINE. THIS ESTIMATE IS PROBABLY VALID FOR STUDY PURPOSES ALTHOUGH AVERAGE CURRENT SELLING PRICE OF LIGNITE IN NORTH DAKOTA IS BETWEEN $1.80 AND $1.90 PER TON. WITHOUT UNDUE PUNITIVE REGULATION, IT SHOULD BE

.1 GENERAL

STRIPPABLE RESERVES WERE MINED, THE AFFECTED AREA WOULD BE EQUIVALENT TO ONLY 28 TOWNSHIPS. LIGNITE CAN BE USED TO FIRE BOILERS FOR ELECTRICAL GENERATING STATIONS, IN GASIFICATION PROCESSES TO PRODUCE SYNTHETIC NATURAL GAS (SNG), IN CONVERSION PROCESSES TO PRODUCE PETROLEUM-TYPE PRODUCTS AND IN PREPARATION OF UPGRADED SOLID FUELS OR AS RAW MATERIAL IN CERTAIN CHEMICAL PROCESSING INDUSTRIES. IN ADDITION TO ELECTRICAL GENERATION, SIX CONCEPTUAL PROCESSES WERE CONSIDERED AS REPRESENTATIVE OF THOSE WHICH MAY BE COMMERCIALIZED. A PLANT PRODUCING 250 MILLION CUBIC FEET PER DAY OF SYNTHETIC NATURAL GAS WOULD USE APPROXIMATELY 10 MILLION TONS OF LIGNITE ANNUALLY, HAVE AN INITIAL CAPITAL INVESTMENT OF $250 MILLION, AN ANNUAL OPERATION AND MAINTENANCE EXPENDITURE OF $30 MILLION, EMPLOY 300 TO 800 PEOPLE AND USE, WITH THE PROPER WATER ECONOMY, ABOUT 10,000 ACRE-FEET OF WATER EACH YEAR. PROCESSING PLANTS WILL REQUIRE UP TO EIGHT TIMES THE MANPOWER NECESSARY FOR OPERATION OF ELECTRICAL GENERATING PLANTS CONSUMING THE SAME QUANTITY OF LIGNITE, AND PRODUCE A NATURAL GAS EQUIVALENT THAT CAN BE TRANSPORTED ECONOMICALLY TO ENERGY LOAD CENTERS. SUCH PLANTS USE LARGE QUANTITIES OF COOLING WATER WHICH MUST BE CAREFULLY USED AND CONSERVED. MORE DETAILED PROCESS DESIGN AND OPERATING DATA ARE NECESSAY TO DEFINE MINIMAL WATER CONSUMPTION.

YPE OF STUDY:

PART OF "WEST RIVER STUDY," NORTH DAKOTA STATE WATER COMMISSION.

EPORTS AND PUBLICATIONS:

FINAL REPORT AND APPENDICES. WEST RIVER STUDY: ANALYSIS OF ALTERNATIVES FOR DEVELOPING AND MANAGING WEST RIVER AREAS, WATER AND RELATED LAND RESOURCES. NORTH DAKOTA STATE WATER COMMISSION, 1975.

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00000408
PROJECT TITLE:
RATES OF EROSION IN THE COLSTRIP AREA
PROJECT SUPERVISOR:
JACK SCHMIDT
MONTANA DEPT. OF STATE LANDS, RECLAMATION DIV.
HELENA, MT 59601
PRIMARY SPONSOR:
MONTANA DEPT. OF STATE LANDS
PRIMARY FUNDING AMOUNT:
46
LOCATION:
MT
ABSTRACT:

THE INITIAL STUDIES WOULD PROVIDE FIELD DATA TO HELP ANSWER THE FOLLOWING QUESTIONS: 1- RATES OF SHEET EROSION ON DIVIDE AND INTERSTREAM AREAS, 2- RATES OF SLOPE RETREAT ADJACENT TO STEEP WALLED GULLIES.

THE MOST SIGNIFICANT EROSIVE PROCESSES AT WORK IN AREAS STUDIED IN THE ARID WEST ARE THOSE WHICH CANNOT BE VISUALLY EVALUATED. A DOUBLING OF THE RATE OF SHEET WASH EROSION ON RECLAIMED SLOPES, NOT VISUALLY DETECTABLE, WOULD PRODUCE A GREAT INCREASE IN SEDIMENT LOAD TO RECEIVING STREAMS.

THE STATE LANDS DEPARTMENT PRESENTLY DISCOURAGES THE ESTABLISHMENT OF PERMANENT IMPOUNDMENTS IN RECLAIMED AREAS. SETTLING PONDS ARE DISMANTLED AFTER DISTURBANCE IN AN AREA HAS CEASED. STUDY OF EROSION RATES AND SOURCES OF SEDIMENT WOULD HELP THE DEPARTMENT ESTABLISH A MORE SOUNDLY BASED TIMETABLE OF SETTLING POND DESTRUCTION.

THE PROJECT HAS CONTINUED WITH SUPPLEMENTAL WORK ON SEDIMENT ACCUMULATION IN SETTLING PONDS AND STUDY OF DRAINAGE DEVELOPMENT.

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00000409
PROJECT TITLE:
HORSE NOSE BUTTE, NORTH DAKOTA RECLAMATION STUDY SITE
PROJECT NUMBER:
EMRIA REPORT 9-1976
INVESTIGATORS:
JACK CHUGG; HERB DUPREE
PROJECT SUPERVISOR:
LEADER REHAB DATA STAFF D307
U.S. BUREAU OF LAND MANAGEMENT
BLDG. 50 D307, DENVER FEDERAL CENTER
LAKEWOOD, CO 80225
PRIMARY SPONSOR:
U.S. BUREAU OF LAND MANAGEMENT
PRIMARY FUNDING AMOUNT:
143,200
TIME FRAME:
07 01 75 TO 07 01 76
LOCATION:
ND
ABSTRACT:

PURPOSE: TO ESTABLISH BASELINE CONDITIONS ON SOIL, OVERBURDEN, COAL RESOURCE, SURFACE AND GROUND WATER QUANTITY AND QUALITY, VEGETATION AND SEDIMENTATION OF THE HORSE NOSE BUTTE SITE BEING CONSIDERED FOR MINING. FROM THESE DATA GUIDANCE FOR PREPARATION OF STIPULATIONS IN FUTURE LEASES WILL BE PREPARED. ALTERNATE RECLAMATION TECHNIQUES AND VEGETATION TYPES WILL BE DESCRIBED. WATER MONITORS WILL REMAIN ON SITE UNTIL BASELINE CONDITIONS ARE ESTABLISHED OR UNTIL NO FURTHER CHANGES ARE ANTICIPATED IF THE AREA IS MINED AND RECLAIMED. CHEMICAL AND PHYSICAL DATA OBTAINED ON ALL GEOLOGIC STRATA TO A DEPTH OF APPROXIMATELY 200 FEET.

THIS PROJECT IS LOCATED AT T144N, R94W, SEC 3, 10, 11, 12, 14, 15.

TYPE OF STUDY:
PART OF 'ENERGY MINERAL REHABILITATION, INVENTORY & ANALYSIS - EMRIA', BUREAU OF LAND MANAGEMENT.
REPORTS AND PUBLICATIONS:
'HORSE NOSE BUTTE RECLAMATION STUDY SITE'. EMRIA REPORT 9-1976. AVAILABLE FROM BLM OFFICE, 316 N. 26TH ST., BILLINGS, MONTANA 59101 AFTER SEPT. 30, 1976.

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00000410
PROJECT TITLE:
BEAR CREEK, MONTANA RECLAMATION STUDY SITE
PROJECT NUMBER:
EMRIA REPORT 8-1976
INVESTIGATORS:
JACK CHUGG; HERB DUPREE
PROJECT SUPERVISOR:
LEADER REHAB DATA STAFF D307
U.S. BUREAU OF LAND MANGEMENT
BLDG. 50 D307 DENVER FEDERAL CENTER
LAKEWOOD, CO 80225
PRIMARY SPONSOR:
U.S. BUREAU OF LAND MANAGEMENT
PRIMARY FUNDING AMOUNT:
157,500
TIME FRAME:
07 01 75 TO 07 01 76

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OCATION:
   MT
BSTRACT:
   PURPOSE:  TO ESTABLISH BASELINE CONDITIONS ON SOIL, OVER-
   BURDEN, COAL RESOURCE, SURFACE AND GROUND WATER QUANTITY
   AND QUALITY, VEGETATION AND SEDIMENTATION OF BEAR CREEK
   SITE BEING CONSIDERED FOR MINING.  FROM THESE DATA
   GUIDANCE FOR PREPARATION OF STIPULATIONS IN FUTURE LEASES
   WILL BE PREPARED.  ALTERNATE RECLAMATION TECHNIQUES AND
   VEGETATION TYPES WILL BE DESCRIBED.  WATER MONITORS WILL
   REMAIN ON SITE UNTIL BASELINE CONDITIONS ARE ESTABLISHED
   OR UNTIL NO FURTHER CHANGES ARE ANTICIPATED IF THE AREA
   IS MINED AND RECLAIMED.  CHEMICAL AND PHYSICAL DATA
   OBTAINED ON ALL GEOLOGIC STRATA TO A DEPTH OF APPROXIMATE-
   LY 200 FEET.
   THIS PROJECT IS LOCATED AT T8S R45E SEC 33, 34; T9S,
   R45E, SEC 3, 4, 11.
YPE OF STUDY:
   PART OF "ENERGY MINERAL REHABILITATION INVENTORY &
   ANALYSIS - EMRIA," BUREAU OF LAND MANAGEMENT.
EPORTS AND PUBLICATIONS:
   "BEAR CREEK MONTANA RECLAMATION STUDY SITE".  EMRIA REPORT
   9-1976.  AVAILABLE FROM BLM OFFICE, 316 N. 26TH ST.,
   BILLINGS, MONTANA  59101 AFTER SEPT. 30, 1976.
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0000411
ROJECT TITLE:
   RED RIM, WYOMING RECLAMATION STUDY SITE
ROJECT NUMBER:
   EMRIA REPORT 7-1976
NVESTIGATORS:
   JACK CHUGG; DEAN SCHACHTERLE
ROJECT SUPERVISOR:
   LEADER REHAB DATA STAFF D307
   U.S. BUREAU OF LAND MANAGEMENT
   BLDG 50 D307, DENVER FEDERAL CENTER
   LAKEWOOD, CO  80225
RIMARY SPONSOR:
   U.S. BUREAU OF LAND MANAGEMENT
RIMARY FUNDING AMOUNT:
   136,500
IME FRAME:
   07 01 75 TO 07 01 76
OCATION:
   WY
BSTRACT:
   PURPOSE:  TO ESTABLISH BASELINE CONDITIONS ON SOIL, OVER-
   BURDEN, COAL RESOURCE, SURFACE AND GROUND WATER QUANTITY
   AND QUALITY, VEGETATION AND SEDIMENTATION OF THE RED RIM
   SITE BEING CONSIDERED FOR MINING.  FROM THESE DATA
   GUIDANCE FOR PREPARATION OF STIPULATIONS IN FUTURE LEASES
   WILL BE PREPARED.  ALTERNATE RECLAMATION TECHNIQUES AND
   VEGETATION TYPES WILL BE DESCRIBED.  WATER MONITORS WILL
   REMAIN ON SITE UNTIL BASELINE CONDITIONS ARE ESTABLISHED
   OR UNTIL NO FURTHER CHANGES ARE ANTICIPATED IF THE AREA
   IS MINED AND RECLAIMED.  CHEMICAL AND PHYSICAL DATA
   OBTAINED ON ALL GEOLOGIC STRATA TO A DEPTH OF APPROX-
   IMATELY 200 FEET.
   THIS PROJECT IS LOCATED AT T19N, R90W, SEC 4, & 18; T20N,
   R90W, SEC 28, 34.
TYPE OF STUDY:
   PART OF "ENERGY MINERAL REHABILITATION INVENTORY &
   ANALYSIS - EMRIA", BUREAU OF LAND MANAGEMENT.
REPORTS AND PUBLICATIONS:
   "RED RIM, WYOMING RECLAMATION STUDY SITE".  EMRIA REPORT
   7-1976.  AVAILABLE FROM P.O. BOX 670, RAWLING, WY  82301
   AFTER SEPT. 30, 1976.
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00000412
PROJECT TITLE:
   GEOLOGIC FACTORS FOR MAPPING RECLAMATION POTENTIAL OF
   WESTERN COAL LANDS
PROJECT NUMBER:
   0930-01560
INVESTIGATORS:
   H. E. MALDE
RESEARCH INSTITUTION:
   U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
   DENVER, CO  80225
PRIMARY SPONSOR:
   U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
   07 01 74 TO 06 30 75
LOCATION:
   MT  ND  SD  WY  AZ  CO  NM  UT
ABSTRACT:
   STATES TO WHICH PROJECT PERTAINS:  AZ, CO, MT, ND, NM, SD,
   UT, WY.
   DECISIONS ON SURFACE MINING OF WESTERN COAL CALL FOR
   KNOWLEDGE OF THE FEASIBILITY OF RECLAMATION, BUT THE
   RECLAMATION POTENTIAL IS POORLY UNDERSTOOD.  THIS PROJECT
   DEALS WITH A RANGE OF GEOLOGIC FACTORS OF TERRAIN AND
   WATER THAT DIRECTLY INFLUENCE THE DEGREE TO WHICH RECLAMA-
   TION CAN BE ACHIEVED.  MINING FOR STRIPPABLE COAL, FOR
   EXAMPLE, 1.  CAUSES THE MINED LAND TO BE RAISED OR
   LOWERED IN ELEVATION, DEPENDING ON THE RATIO OF OVER-
   BURDEN TO THICKNESS OF COAL;  2.  OBLITERATES, OR
   MODIFIES, LARGE AND SMALL IRREGULARITIES OF THE
   ORIGINAL TERRAIN;  3.  INTERFERES WITH SURFACE WATER BY
   CHANGING STREAM GRADIENTS, SEDIMENT LOAD, DISSOLVED
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SOLIDS, FLOOD DISCHARGE, CHANNEL SHAPE, AND CHANNEL POSITION; AND 4. CHANGES CONDITIONS OF GROUND WATER BY REMOVING AQUIFERS, LOWERING THE WATER TABLE, REDUCING STORAGE AND RATE OF FLOW, INCREASING DISSOLVED SOLIDS, AND MODIFYING AREAS OF RECHARGE. BECAUSE THESE CIRCUMSTANCES OF TERRAIN AND WATER PLACE LIMITS ON RECLAMATION ACHIEVEMENTS, THIS STUDY IS DIRECTED TOWARD A FULLER DETERMINATION OF RECLAMATION POTENTIAL BASED ON MEASUREMENT OF SUCH PERTINENT GEOLOGIC, HYDROLOGIC, AND GEOMORPHIC FACTORS AS VARIETY AND STEEPNESS OF SLOPE, DIVERSITY OF LANDSCAPE, CONDITIONS OF EROSION, DENSITY AND CHARACTER OF SURFACE DRAINAGE, NATURE OF RESISTANT OUTCROPS, VARIATIONS IN SOILS AND OVERBURDEN, AND STRUCTURE OF THE COAL DEPOSITS WITH RESPECT TO TOPOGRAPHY AND WATER SUPPLY.

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00000413
PROJECT TITLE:
OTTER CREEK EAST RECLAMATION SITE-OVERBURDEN INVESTIGATION
PROJECT NUMBER:
002
INVESTIGATORS:
H. P. DUPREE
U.S. BUREAU OF RECLAMATION
P.O. BOX 2553
BILLINGS, MT 59103
PROJECT SUPERVISOR:
FRED WALDHAUS
U.S. BUREAU OF LAND MANAGEMENT
P.O. BOX 30157
BILLINGS, MT 59107
PRIMARY SPONSOR:
U.S. BUREAU OF LAND MANAGEMENT
EDWIN ZAIDLICZ
P.O. BOX 30157
BILLINGS, MT 59107
PRIMARY FUNDING AMOUNT:
9,600
TIME FRAME:
04 22 76 TO 05 01 77
LOCATION:
MT - POWDER RIVER CO., OTTER CREEK
ABSTRACT:

OBJECTIVE: TO COLLECT BASELINE CONDITIONS ON VEGETATION, SOIL, OVERBURDEN, COAL RESOURCE, SUBSTRATA BELOW THE COAL AND OTHER ENVIRONMENTAL FACTORS. FROM THESE DATA RELEASE STIPULATIONS CAN BE FORMULATED.

A SOILS INVENTORY WILL BE ACCOMPLISHED. SUBSURFACE DATA WILL BE DETERMINED FROM CORE SAMPLES.

THIS PROJECT IS LOCATED AT T. 4 S., R. 45 E., SEC. 28

TYPE OF STUDY:
PART OF 'ENERGY MINERALS REHABILITATION INVENTORY AND ANALYSIS - EMRIA,' U.S. BUREAU OF LAND MANAGEMENT.
REPORTS AND PUBLICATIONS:
FINAL REPORT AVAILABLE FROM: DISTRICT MANAGER, BLM. MILES CITY DISTRICT OFFICE, P.O. BOX 940, MILES CITY, MT 59301 WHEN COMPLETED

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00000414
PROJECT TITLE:
DAM CREEK RECLAMATION SITE-OVERBURDEN INVESTIGATION
PROJECT NUMBER:
001
INVESTIGATORS:
H. P. DUPREE
U.S. BUREAU OF RECLAMATION
P.O. BOX 2553
BILLINGS, MT 59103
PROJECT SUPERVISOR:
FRED WALDHAUS
U.S. BUREAU OF LAND MANAGEMENT
P.O. BOX 30157
BILLINGS, MT 59107
PRIMARY SPONSOR:
U.S. BUREAU OF LAND MANAGEMENT
EDWIN ZAIDLICZ
P.O. BOX 30157
BILLINGS, MT 59107
PRIMARY FUNDING AMOUNT:
9,900
TIME FRAME:
04 22 76 TO 05 01 77
LOCATION:
MT - POWDER RIVER CO., OTTER CREEK
ABSTRACT:

OBJECTIVE: TO COLLECT BASELINE CONDITIONS ON VEGETATION, SOIL, OVERBURDEN, COAL RESOURCE, SUBSTRATA BELOW THE COAL AND OTHER ENVIRONMENTAL FACTORS. THESE DATA PRELEASE STIPULATIONS CAN BE FORMULATED.

A SOILS INVENTORY WILL BE ACCOMPLISHED. SUBSURFACE DATA WILL BE DETERMINED FROM CORE SAMPLES.

THIS PROJECT IS LOCATED AT T. 5 S., R. 45 E., SEC 12.

TYPE OF STUDY:
PART OF 'ENERGY MINERALS REHABILITATION INVENTORY AND ANALYSIS - EMRIA,' U.S. BUREAU OF LAND MANAGEMENT.
REPORTS AND PUBLICATIONS:
FINAL REPORT AVAILABLE FROM: DISTRICT MANAGER, BLM, MILES CITY DISTRICT OFFICE, P.O. BOX 940, MILES CITY, MT 59301 WHEN COMPLETED.

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)000415
OJECT TITLE:
EFFECT OF SELECTIVE REPLACEMENT OF COAL SURFACE MINE OVERBURDEN STRATA ON SOIL AND HYDROLOGY RELATIONSHIPS
OJECT SUPERVISOR:
RICHARD L. HODDER
MONTANA STATE UNIV.
BOZEMAN, MT 59715
OPERATOR:
WESTERN ENERGY CO.

COLSTRIP, MT
IMARY SPONSOR:
U.S. BUREAU OF MINES
DONALD L. DONNER
DMRC, DENVER FEDERAL CENTER, BLDG. 20
DENVER, CO 80225
IMARY FUNDING AMOUNT:
FY 77 - 400,000 ; PRIOR - 420,000
ME FRAME:
06 01 76 TO 06 01 79
CATION:
MT - COLSTRIP. WESTERN ENERGY COMPANY´S MINE AREA ´B´
STRACT:

THIS PROPOSAL IS CONCERNED WITH REDUCING THE IMPACTS TO GROUND WATER QUALITY AND QUANTITY CAUSED BY SURFACE MINING OF COAL WHERE OVERBURDEN IS HIGH IN TOXIC SALTS AND SOLUBLE METALLIC MINERALS. SPECIFICALLY, THE CONTRACTOR SHALL DESIGN ALTERNATE OVERBURDEN HANDLING TECHNIQUES WHICH WILL PERMIT 1. THE SELECTIVE REMOVAL, HANDLING, AND SEGREGATION OF TOXIC OVERBURDEN UNITS, 2. THE CAPPING OF TOXIC OVERBURDEN UNITS WITH A SELECTED, COMPACTED CLAY AND/OR SHALE MATERIAL IN ORDER TO MINIMIZE THE PERCOLATION AND INFILTRATION OF SURFACE WATER THROUGH THE TOXIC MATERIALS AND THE RESULTANT CONTAMINATION OF THE GROUND WATER SYSTEM, 3. THE RE-ESTABLISHMENT OF THE DISTURBED AQUIFER SYSTEM WITH NON-TOXIC, RELATIVELY PERMEABLE OVERBURDEN MATERIALS, AND 4. THE GEOHYDROLOGIC ISOLATION OF THE MINED AREA.

ALL CONCEPTS DEVELOPED SHALL BE SUBJECTED TO ENGINEERING AND COST FEASIBILITY ANALYSES. THE PROPOSED TECHNIQUES WILL BE DEMONSTRATED AT WESTERN ENERGY COMPANY´S COLSTRIP MINE SITE.

PE OF STUDY:
PART OF ´SURFACE MINING, EXTRACTION, RECLAMATION SUB-PROGRAM´. U.S. BUREAU OF MINES.

00000416
PROJECT TITLE:
ESTABLISHMENT AND SEED DEVELOPMENT OF SPECIES GROWN ON RECLAIMED AREAS
PROJECT NUMBER:
684-15-5
INVESTIGATORS:
L. E. WIESNER
RESEARCH INSTITUTION:
MONTANA STATE UNIV., DEPT. OF PLANT AND SOIL SCIENCES
BOZEMAN, MT 59715
PRIMARY SPONSOR:
U.S. DEPT. OF AGRICULTURE, COOP. STATE RESEARCH SERVICE
PRIMARY FUNDING AMOUNT:
50,000
TIME FRAME:
10 09 75 TO 12 31 78
LOCATION:
MT
ABSTRACT:

OBJECTIVES: EVALUATE SEED OF SPECIES WHICH HAVE PROMISE FOR REVEGETATION. DEVELOP TREATMENTS FOR OVERCOMING DORMANCY (OF SEEDS TO IMPROVE ESTABLISHMENT). EVALUATE ESTABLISHMENT OF SPECIES IN NEW PLANTINGS. EVALUATE THE BIOLOGICAL ASPECTS (VIABILITY, DORMANCY, SIZE, AMOUNT, ETC.) OF THE SEED PRODUCED BY PLANTS GROWING ON RECLAIMED AREAS.

APPROACH: SEED SPECIES CONSIDERED FOR USE IN RECLAIMING SPOILS WILL BE EVALUATED FOR SPEED OF GERMINATION AND DORMANCY. THOSE SPECIES HAVING DORMANT SEED WILL BE STUDIED TO DETERMINE THE CAUSE OF DORMANCY. DORMANCY BREAKING TREATMENTS TO BE STUDIED IN THE LABORATORY AND THE FIELD INCLUDE SCARIFICATION, PRESOAKING, CHILLING, ALTERNATE WETTING AND DRYING, PLANT HORMONES AND OTHER CHEMICALS. ON-SITE SEED COLLECTIONS WILL BE MADE FROM SPECIES SUCCESSFULLY ESTABLISHED ON SPOILS. THESE COLLECTIONS WILL BE EVALUATED FOR AMOUNT PRODUCED, VIABILITY AND DORMANCY. SEED FROM THESE COLLECTIONS WILL ALSO BE COMPARED WITH SEED COLLECTED FROM PLANTS IN ADJACENT UNDISTURBED AREAS. PLANTING WILL BE MADE UNDER RECLAMATION SITUATIONS AND ESTABLISHMENT CORRELATED WITH PURE-LIVE SEED AND OTHER SEED TRAITS.

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00000417
PROJECT TITLE:
EFFECTS OF SPECIES ROOT DISTRIBUTION IN SOIL BIOTA-GENESIS-HYDROLOGICAL CHARACTERISTICS
PROJECT NUMBER:
684-15-4
INVESTIGATORS:
G.A. NEILSON ; K. TEMPLE ; D. J. DOLLHOPF
RESEARCH INSTITUTION:
MONTANA STATE UNIV., AG. EXP. STATION

BOZEMAN, MT 59715

COOPERATOR:
U.S. SOIL CONSERVATION SERVICE (SCS IS CONDUCTING DETAILED

SOIL INVENTORY)

PRIMARY SPONSOR:
U.S. DEPT. OF AGRICULTURE, COOP. STATE RESEARCH SERVICE

TIME FRAME:
10 09 75 TO 12 31 77

LOCATION:
MI

ABSTRACT:

OBJECTIVES: DETERMINE THE GENESIS, CLASSIFICATION AND EVALUATION OF SOILS DEVELOPING FROM COAL STRIP MINE SPOIL MATERIALS, MEASURE MICROBIAL ACTIVITY IN RELATION TO PLANT ROOTS, DETERMINE ROOTING DEPTHS AND GROWTH PATTERNS, DETERMINE THE UNSATURATED SOIL WATER FLOW PATTERNS AND CORRELATE HYDROLOGY DATA WITH ROOT GROWTH RESULTS. FORMULATE RECOMMENDATIONS FOR OPTIMIZING SOIL DEVELOPMENT ON RECLAIMED SPOILS.

APPROACH: EIGHTEEN STUDY SITES ARE SELECTED NEAR COLSTRIP IN SOUTHEASTERN MONTANA. MINED SITES ARE FROM 1 TO 50 YEARS OLD. UNMINED SITES IN NATIVE RANGE AND CULTIVATED AREAS ARE ON BENCHMARK SOIL SERIES. METHODS WILL INCLUDE TIME SEQUENCE MONITORING; p32 UPTAKE FOR ROOT GROWTH PATTERNS; ATP MEASUREMENTS FOR RHIZOPLANE, RHIZOSPHERE AND TOTAL SOIL MICROBIAL ACTIVITY; AND NEUTRON PROBE EQUIPMENT FOR SOIL WATER MOVEMENT.

TYPE OF STUDY:
THIS ABSTRACT DESCRIBES THREE SUBPROJECTS. FOR A DESCRIPTION OF THE SUBPROJECT ON SOIL BIOTA, SEE ERIS SERIAL NUMBER 00000309, VOL. 1, NO. 2, ´SOIL MICROBIOLOGICAL STUDIES ON THE RECLAMATION OF COAL SURFACE MINE SPOILS IN EASTERN MONTANA.´

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0000418

ROJECT TITLE:

A MODEL FOR PREDICTING ION CONCENTRATION IN THE YELLOWSTONE RIVER BASIN BETWEEN MILES CITY AND BILLINGS, MONTANA: A MANAGEMENT TOOL (M.S. THESIS-U.S. EPA FELLOWSHIP).

NVESTIGATORS:

RICHARD W. KARP

ROJECT SUPERVISOR:

DONALD BOYD
MONTANA STATE UNIV.
BOZEMAN, MT 59715

RIMARY SPONSOR:

U.S. EPA

RIMARY FUNDING AMOUNT:

6,500

IME FRAME:

09 22 75 TO 09 21 76

OCATION:

MT

BSTRACT:

MANY GOVERNMENT AGENCIES THAT ARE CONCERNED WITH WATER RESOURCE MANAGEMENT HAVE BEEN COLLECTING SUBSTANTIAL AMOUNTS OF WATER QUALITY DATA ON THE YELLOWSTONE RIVER BASIN. AS WATER QUALITY DATA INCREASES IN AMOUNT, IT IS IMPERATIVE THAT THE DATA BE ANALYZED FOR RELATIONSHIPS WHICH CAN BE USED FOR PREDICTIVE PURPOSES IN WATER QUALITY MANAGEMENT. SUCH RELATIONSHIPS CAN ALSO BE USED TO IDENTIFY THOSE PARAMETERS FOR WHICH CHEMICAL ANALYSIS SHOULD BE DISCONTINUED. AN OBSERVATION OF THE WATER QUALITY DATA FOR THE YELLOWSTONE RIVER INDICATES THAT RELATIONSHIPS EXIST BETWEEN THE CONCENTRATION OF VARIOUS IONS, ELECTRICAL CONDUCTIVITY, AND QUANTITY OF FLOW. SIMILAR RELATIONSHIPS HAVE BEEN FOUND FOR OTHER RIVER SYSTEMS.

THE SCOPE AND OBJECTIVE OF THIS STUDY ARE:

1. TO DEVELOP A MODEL FOR PREDICTING THE LEVEL OF VARIOUS SELECTED WATER QUALITY PARAMETERS ALONG THE YELLOWSTONE RIVER BETWEEN BILLINGS AND MILES CITY, MONTANA, FROM MEASUREMENTS OF EC AND Q.

2. TO DEVELOP THE MODELING CAPABILITY REQUIRED TO INDICATE INCREMENTAL CHANGES IN THE WATER QUALITY PARAMETERS EXPECTED TO OCCUR AS A RESULT OF ENERGY RELATED DEVELOPMENT IN THE BASIN.

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0000419

ROJECT TITLE:

HYDROLOGY OF THE MADISON FORMATION AND ITS POTENTIAL USE FOR WATER SUPPLY FOR ENERGY DEVELOPMENT

PROJECT NUMBER:

OWRT 14-31-0001-4051

INVESTIGATORS:

PETER W. HUNTOON
UNIV. OF WYOMING, DEPT. OF GEOLOGY
LARAMIE, WY 82071

PROJECT SUPERVISOR:

PAUL A. RECHARD
UNIV. OF WYOMING, WATER RESOURCES RESEARCH INST.
LARAMIE, WY 82071

PRIMARY SPONSOR:

U.S. DEPT OF INTERIOR, OFFICE OF WATER RESEARCH & TECH.
WASHINGTON, DC

PRIMARY FUNDING AMOUNT:

35,000

TIME FRAME:

06 01 74 TO 06 01 77

STATUS:

COMPLETED 05 01 76

LOCATION:

WY - POWDER RIVER BASIN

ABSTRACT:

PRECIPITATION ON THE BIGHORN MOUNTAINS IN WYOMING PROVIDES APPROXIMATELY 400,000 AC FT/YR OF RECHARGE WATER TO THE MADISON AQUIFER IN THE POWDER RIVER BASIN. THE MADISON AQUIFER IS HEREIN DEFINED TO INCLUDE THE PALEOZOIC BIGHORN DOLOMITE, JEFFERSON DOLOMITE, MADISON LIMESTONE, AMSDEN FORMATION, AND TENSLEEP SANDSTONE.

RECHARGE TAKES PLACE THROUGH OUTCROPS PRIMARILY ALONG FRACTURES SUCH AS JOINTS, PARTINGS ALONG BEDDING, AND SECONDARY FRACTURES ASSOCIATED WITH FAULTS AND FOLDS. THE FRACTURES ALONG FAULTS AND FOLDS PRODUCE ZONES OF LARGE SECONDARY PERMEABILITY THAT PARALLEL THE TRENDS OF THE STRUCTURES. THESE ZONES ARE IMPORTANT IN THE RECHARGE PROCESS ONLY WHERE THEY TREND FROM THE FLANKS OF THE BIGHORN RANGE INTO THE POWDER RIVER BASIN.

MOVEMENT OF WATER THROUGH A PALEOKARST DEVELOPED IN THE UPPER PART OF THE MADISON LIMESTONE OR THROUGH GEOLOGICALLY YOUNG CAVES IS NEGLIGIBLE.

THE AVERAGE ANNUAL RECHARGE TO THE MADISON AQUIFER ALONG THE 145 MILES OF OUTCROP EXAMINED IN WYOMING IS 2,800 AC FT/MILE. ABOUT 30% OF THIS TAKES PLACE THROUGH ZONES OF SECONDARY PERMEABILITY ASSOCIATED WITH TECTONIC STRUCTURES. EACH STRUCTURE ACCOUNTS FOR AN AVERAGE OF 9,600 AC FT/YR OF RECHARGE. APPROXIMATELY 180,000 AC FT/YR ENTERS THE MADISON LIMESTONE BASED ON THE THICKNESS OF THE MADISON LIMESTONE COMPARED TO THE TOTAL THICKNESS OF THE MADISON AQUIFER.

REPORTS AND PUBLICATIONS:

GROUND WATER RECHARGE TO THE MADISON AQUIFER IN THE POWDER RIVER BASIN FROM THE BIGHORN MOUNTAINS OF WYOMING. PETER W. HUNTOON, 1976, IN PRESS. REPT. SUBMITTED TO WATER

RESOURCES RESEARCH - PREPRINTS AVAILABLE FROM WYOMING WATER RESOURCES RESEARCH INSTITUTE, UNIV. OF WYOMING, LARAMIE, WY 82071.

PERMEABILITY AND GROUND WATER CIRCULATION IN THE MADISON AQUIFER ALONG THE EASTERN FLANK OF THE BIGHORN MOUNTAINS OF WYOMING. PETER W. HUNTOON, 1976, IN PRESS. REPT. SUBMITTED TO WYOMING GEOLOGICAL ASSOCIATION 1976 GUIDEBOOK - PREPRINTS AVAILABLE FROM WYOMING WATER RESOURCES RESEARCH INSTITUTE.

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00000420

PROJECT TITLE:
EVALUATION AND MONITORING OF THE HYDROLOGIC IMPACT OF CABIN CREEK, B.C. COAL PIT MINING UPON THE NORTH FORK OF THE FLATHEAD RIVER.

PROJECT SUPERVISOR:
W. MARK WEBER
UNIV. OF MONTANA, SCHOOL OF FORESTRY
MISSOULA, MT 59801

PRIMARY SPONSOR:
U.S. DEPT. OF INTERIOR, OFFICE OF WATER RESEARCH & TECH.

PRIMARY FUNDING AMOUNT:
8,480

TIME FRAME:
07 01 75 TO 06 30 76

ABSTRACT:

THE PROPOSED RESEARCH INVOLVED FIELD INVESTIGATION OF THE HYDRAULIC GEOMETRY AND FLUVIAL GEOMORPHOLOGY OF THE NORTH FORK OF THE FLATHEAD RIVER AND ITS PRINCIPAL TRIBUTARIES IN ORDER TO DETERMINE THE RELATIVE STATE OF WATERSHED STABILITY AND SENSITIVITY TO INFLUX OF INCREASED LEVELS OF SUSPENDED- AND BED LOAD WHICH MAY RESULT FROM THE PROPOSED COAL PIT MINING AND URBANIZATION IN THE CABIN CREEK, B.C. AREA. A NETWORK OF CHANNEL GEOMETRY MONITORING STATIONS (VIGIL NETWORK) WILL BE ESTABLISHED TO DOCUMENT BIOPHYSICAL ´BASELINE´ CONDITIONS AND WILL PERMIT FUTURE MONITORING OF BIOPHYSICAL CHANGE AT THESE RECOVERABLE STATIONS.

FIELD INVESTIGATIONS WOULD INCLUDE: 1. SURVEYING RIVER PROFILES AND CROSS-SECTIONS, 2. SURVEYING AND DESCRIBING VIGIL NETWORK SITES (12), 3. GEOMORPHOLOGICAL MAPPING.

OFFICE INVESTIGATIONS WOULD INCLUDE: 1. PHOTOGEOLOGIC MAPPING OF THE WATERSHED ON CURRENT (1974) AIR PHOTOS, 2. INTERPRETATIVE ANALYSIS OF 1932-1974 AIR PHOTOS TO ESTABLISH THE HYDROGEOLOGIC CHARACTER AND RATES OF CHANGE OF CHANNEL MORPHOLOGY AND PATTERN, 3. INTEGRATION OF HYDRAULIC GEOMETRY DATA WITH U.S.G.S. GAGING STATION DATA ON STREAM FLOW, WATER QUALITY, AND SUSPENDED SEDIMENT LOAD.

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00000421

PROJECT TITLE:
WATER AND LAND REQUIREMENTS AND POTENTIAL ECONOMIC BENEFITS RELATED TO COAL-ENERGY DEVELOPMENT ALTERNATIVES IN WYOMING´S POWDER RIVER BASIN

PROJECT NUMBER:
OWRT-8447

INVESTIGATORS:
JOHN CARLSON; G. FRED DOLL; PAUL A. RECHARD

PROJECT SUPERVISOR:
CLYNN PHILLIPS
UNIV. OF WYOMING, WATER RESOURCES RESEARCH INST.
BOX 3067, UNIV. STATION
LARAMIE, WY 82071

PRIMARY SPONSOR:
U.S. DEPT. OF INTERIOR, OFFICE OF WATER RESEARCH & TECH.
LUTHER C. DAVIS
WASHINGTON, DC 20240

PRIMARY FUNDING AMOUNT:
1975 - 37,751 ; 1976 - 41,924

TIME FRAME:
11 01 74 TO 10 31 76

LOCATION:
WY - POWDER RIVER BASIN

ABSTRACT:

AN ECONOMIC SIMULATION MODEL DEVELOPED FOR WYOMING´S NORTH PLATTE RIVER BASIN WILL BE TRANSFERRED, WITH NECESSARY MODIFICATIONS AND ADAPTATIONS, TO WYOMING´S POWDER RIVER BASIN. THE POWDER RIVER BASIN COMPRISES THE NORTHEASTERN PORTION OF THE STATE AND CONTAINS WYOMING´S PORTION OF MASSIVE FORT UNION COAL FORMATION. AFTER BEING OPERATIONALLY ADOPTED, THE SIMULATION MODEL WILL BE USED FOR THREE PURPOSES. FIRST, THE MODEL WILL BE USED TO DETERMINE WATER AND LAND REQUIREMENTS FOR VARIOUS COAL-ENERGY DEVELOPMENT ALTERNATIVES. SECOND, THE MODEL AND OTHER APPROPRIATE ANALYTICAL TECHNIQUES WILL BE USED TO DETERMINE THE IMPORTANCE OF WATER AS AN INPUT IN THE PRODUCTION OF THE VARIOUS COAL-ENERGY PRODUCTS THAT ARE CURRENTLY BEING CONSIDERED BY THE COAL-ENERGY INDUSTRIES. THIRD, THE MODEL WILL BE USED TO IDENTIFY AREAS WHERE WATER DEVELOPMENT (OR LACK OF DEVELOPMENT) CAN BE USED TO INFLUENCE (POSITIVELY AND NEGATIVELY) DEVELOPMENT OF THE REGION´S COAL RESOURCES IN A MANNER CONSISTENT WITH LOCAL, STATE, REGIONAL AND NATIONAL OBJECTIVES.

AN EXPLICIT PREMISE OF THIS PROPOSAL IS THE CONTENTION THAT DEVELOPMENT-RELATED SOCIOECONOMIC INTERACTIONS ARE SO COMPLEX THAT THEY CANNOT BE ADEQUATELY TREATED WITHOUT SOME TYPE OF SYSTEMATIC MODEL. FURTHERMORE, DEVELOP-

MENT AND USE OF THE REGION'S ABUNDANT ENERGY RESOURCES AND SCARCE LAND AND WATER RESOURCES CANNOT BE EFFECTIVELY PLANNED UNLESS PLANNERS AND DECISION-MAKERS HAVE ACCESS TO A MODEL BY WHICH ALTERNATIVE RESOURCE USES CAN BE COMPREHENSIVELY EVALUATED WITH RESPECT TO SPECIFIED CRITERIA.

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0000422

ROJECT TITLE:
WATER RESOURCES DATA SYSTEM
ROJECT NUMBER:
7740A
ROJECT SUPERVISOR:
VERNE E. SMITH
UNIV. OF WYOMING, WATER RESOURCES RESEARCH INST.
BOX 3067, UNIVERSITY STATION
LARAMIE, WY 82071
RIMARY SPONSOR:
WYOMING STATE ENGINEER
OFFICE OF WATER PLANNING
2001 CENTRAL AVE.
CHEYENNE, WY 82002
ECONDARY SPONSORS:
U.S. BUREAU OF LAND MANAGEMENT
2120 CAPITOL AVE.
CHEYENNE, WY 82001
RIMARY FUNDING AMOUNT:
90,000
ECONDARY FUNDING AMOUNTS:
28,000
IME FRAME:
07 01 74 TO 06 30 77
OCATION:
WY
BSTRACT:
PROVIDE COMPUTER STORAGE AND RETRIEVAL OF SURFACE WATER FLOWS, SURFACE AND GROUND WATER QUALITY, SNOW COURSE, AND CLIMATIC DATA FOR WYOMING. PROVIDE STATISTICAL AND HYDROLOGICAL ANALYSES OF THE DATA.
EPORTS AND PUBLICATIONS:
VERNE E. SMITH. 'SURFACE WATER SYSTEM - 1973'. JANUARY 1974, WRRI RESOURCE SERIES 43.

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0000423

ROJECT TITLE:
INVESTIGATIONS OF THE IMPLICATIONS OF YELLOWSTONE RIVER FLOW RESERVATION IN MONTANA
INVESTIGATORS:
HAROLD BOEKER
U.S. FISH & WILDLIFE SERV.
RESEARCH INSTITUTION:
MONTANA DEPT. OF FISH & GAME
PRIMARY SPONSOR:
U.S. FISH & WILDLIFE SERV.
PRIMARY FUNDING AMOUNT:
100,000
TIME FRAME:
06 23 75 TO 06 30 78
ABSTRACT:
OBJECTIVES: 1. TO CORRELATE AND SUPPLEMENT THE BASELINE DATA OBTAINED FROM THE VARIOUS STUDIES CURRENTLY BEING CONDUCTED BY THE FISH & GAME DEPT. ON THE YELLOWSTONE RIVER, AND OTHER AVAILABLE INFORMATION AND TO ASSESS THE IMPACTS WHERE SUFFICIENT DATA EXISTS OF VARIOUS ASSUMED RIVER FLOW REGIMES ON THE COMPONENTS OF THE NATURAL BIOLOGICAL SYSTEM.
2. TO DEVELOP INSTREAM FLOW REQUIREMENTS FOR THE STREAM SYSTEM AND TO SUPPORT AN APPROPRIATE APPLICATION FOR RESERVATION OF FLOWS UNDER TERMS OF THE APPLICABLE STATE STATUTE.
3. TO EVALUATE THE ADEQUACY OF THE THREE-YEAR MORATORIUM PERIOD FOR OBTAINING THE NECESSARY BASELINE DATA AND TO ANALYZE THE EFFECTIVENESS OF THIS PROJECT APPROACH IN ACCOMPLISHING OBJECTIVES 1 AND 2.
4. TO ASSEMBLE ALL DATA, ANALYSES AND CONCLUSIONS IN A MANNER SUITABLE FOR USE IN FUTURE ANALYSES RELATED TO ANTICIPATED ALTERNATIVE WATER DEVELOPMENT AND USE STUDIES.

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00000424

PROJECT TITLE:
WATER RESOURCES ASPECTS OF COAL TRANSPORTATION BY SLURRY PIPELINE
PROJECT SUPERVISOR:
J. MOORE, DIRECTOR
UNIV. OF ARKANSAS, WATER RESOURCES RESEARCH CENTER
UNIVERSITY HALL
FAYETTEVILLE, AK 72701
PRIMARY SPONSOR:
U.S. DEPT. OF INTERIOR, OFFICE OF WATER RESEARCH & TECH.
PRIMARY FUNDING AMOUNT:
54,817
TIME FRAME:
07 01 75 TO 06 01 76
LOCATION:
MT ND SD WY
ABSTRACT:
LARGE QUANTITIES OF LOW SULFUR COAL ARE LOCATED IN THE

WESTERN PART OF THE UNITED STATES, PARTICULARLY IN WYOMING, MONTANA, AND THE DAKOTAS. UNFORTUNATELY, AVAILABLE WATER RESOURCES IN THESE AREAS ARE LIMITED. THE INCREASED USAGE OF COAL HAS RESULTED IN INCREASED EFFORTS REGARDING COAL GASIFICATION AND COAL LIQUEFACTION. IN ADDITION, REQUIREMENTS FOR THE RECLAMATION OF STRIP MINED ARE FORTH-COMING. IN THE LOW-SULFUR COAL AREAS OF THE WEST, THE INCREASED USAGE OF COAL CONVERSION AND RECLAMATION OF STRIP MINED LAND WILL ADD A SUBSTANTIAL BURDEN TO ALREADY STRESSED WATER RESOURCES.

THREE SIGNIFICANT WATER RESOURCE CONSIDERATIONS ARE EVIDENT CONCERNING COAL TRANSPORTATION BY SLURRY PIPELINES. THESE ARE THE WATER QUALITY DETERIORATION THAT CAN BE EXPECTED FROM THE PROCESS, THE POSSIBILITY OF USING WATER OF LOW QUALITY (MUNICIPAL AND INDUSTRIAL EFFLUENTS) AS THE SOURCE OF WATER FOR THE SLURRY, AND THE TREATMENT PROCEDURES REQUIRED BOTH AT DUMP STATIONS AND AT THE RECEIVING END OF THE PIPELINE. THE PROPOSED RESEARCH PROGRAM INCLUDES ALL THREE OF THESE MAJOR AREAS.

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00000425

PROJECT TITLE:

GROUND WATER QUALITY STUDY

INVESTIGATORS:

MARVIN MILLER
MONTANA BUREAU OF MINES & GEOLOGY
RM. 203B - MAIN HALL
BUTTE, MT 59701
WILLARD OWENS
WILLARD OWENS ASSOCIATES
7391 W. 38TH AVE.
WHEATRIDGE, CO 80033
YELLOWSTONE-TONGUE APO
CLARK JUDY
BOX 503
BROADUS, MT 59317

PRIMARY SPONSOR:

U.S. EPA
1860 LINCOLN ST.
DENVER, CO 80203

PRIMARY FUNDING AMOUNT:

37,700

TIME FRAME:

01 01 76 TO 12 31 76

LOCATION:

SOUTHEASTERN MONTANA

ABSTRACT:

IT IS A TWO PHASE PROJECT. THE BUREAU OF MINES & GEOLOGY WILL COLLECT AND COMPUTERIZE ALL KNOWN GROUND WATER QUALITY DATA FOR THE PROJECT AREA AND THE YELLOWSTONE-TONGUE APO WILL COLLECT ADDITIONAL GROUND WATER QUALITY DATA UNDER THEIR DIRECTION. THEN, WILLARD OWENS ASSOCIATES WILL DETERMINE THE PROBABILITY FOR GROUND WATER CONTAMINATION DUE TO THE EXPLORATION AND EXTRACTION TECHNIQUES UTILIZED BY THE PETROLEUM AND URANIUM INDUSTRIES. THE STUDY WILL BE COORDINATED WITH MONTANA DEPT. OF NATURAL RESOURCES & CONSERVATION WORK ON SOLUTION MINING FOR URANIUM. A DATA BASE WILL BE PROVIDED FOR MUCH OF THE AREA OF POTENTIAL COAL DEVELOPMENT.

TYPE OF STUDY:

PART OF ´YELLOWSTONE-TONGUE WATER QUALITY MANAGEMENT PROJECT.´ YELLOWSTONE-TONGUE APO.

REPORTS AND PUBLICATIONS:

FIRST REPORT DUE LATE 1976.

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00000426

PROJECT TITLE:

EFFECTS OF THERMAL DISCHARGE ON RIVER LIFE

PROJECT NUMBER:

CONTRACT 601

PROJECT SUPERVISOR:

JOE K. NEEL
UNIV. OF NORTH DAKOTA, DEPT. OF BIOLOGY
GRAND FORKS, ND

PRIMARY SPONSOR:

BASIN ELECTRIC POWER COOPERATIVE
DUANE BYE
1717 EAST INTERSTATE AVE.
BISMARCK, ND 58501

PRIMARY FUNDING AMOUNT:

25,000

TIME FRAME:

09 01 72 TO 10 05 73

STATUS:

COMPLETED 05 01 74

LOCATION:

ND - MISSOURI RIVER, MERCER CO., SEC. 21, T144N, R84W, VICINITY OF LELAND OLDS STATION 4 MILES SOUTHEAST OF STANTON, ND.

ABSTRACT:

PURPOSE OF THE STUDY WAS TO DETERMINE WHETHER THE THERMAL DISCHARGE FROM THE ONCE-THROUGH COOLING SYSTEM AT LELAND OLDS UNIT 1 HAD ANY EFFECT ON THE PHYSICAL, BIOLOGICAL AND CHEMICAL PROPERTIES OF THE MISSOURI RIVER, AND WHETHER THE ASHPOND EFFLUENT HAD ANY EFFECTS ON THE RIVER.

SAMPLES WERE COLLECTED AT FIVE SITES - TWO UPSTREAM, TWO WITHIN THE THERMAL STREAK, AND ONE BELOW THE THERMAL STREAK. THE FOLLOWING PARAMETERS WERE MEASURED: TEMPERATURE, PH, ALKALINITY, HARDNESS, NITROGEN, PHOS-

PHORUS, SULFATE, CHLORIDE, CONDUCTIVITY, PLANKTON,
ALGAE, BENTHOS AND FISHES.
EPORTS AND PUBLICATIONS:
JOE K. NEEL. 'MISSOURI RIVER - WARMED WATER AND WATER QUALITY TWENTY MILES BELOW GARRISON DAM'. MAY 1974. AVAILABLE FROM: BASIN ELECTRIC POWER COOPERATIVE, 1717 EAST INTERSTATE AVE., BISMARCK, ND 58501, ATTN: DUANE BYE.

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0000427
ROJECT TITLE:
POSSIBLE EFFECTS OF STRIP COAL MINING ON THE HYDROLOGIC SYSTEM IN THE SARPY CREEK AREA, SOUTHEASTERN MONTANA
ROJECT SUPERVISOR:
W. A. VAN VOAST
MONTANA COLLEGE OF MINERAL SCIENCES AND TECHNOLOGY
BUTTE, MT 59701
RIMARY SPONSOR:
WESTMORELAND RESOURCES
RIMARY FUNDING AMOUNT:
1974 - 18,000
IME FRAME:
06 01 73 TO 07 01 74
OCATION:
MT
BSTRACT:
TO DETERMINE HYDROLOGIC CONDITIONS DUE TO STRIP COAL MINING SOUTHEASTERN MONTANA, (SARPY CREEK AREA). TO DETECT ANY CHANGES IN ARTESIAN PRESSURE OF WATER QUALITY AS MINIMUM OPERATIONS PROCEED.

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000428
ROJECT TITLE:
WATER RIGHTS ON POWDER RIVER WITH DRAINAGE IN MONTANA
ROJECT SUPERVISOR:
G. W. BASWELL
MONTANA DEPT. OF NATURAL RESOURCES & CONSERVATION
HELENA, MT 59601
RIMARY SPONSOR:
MONTANA DEPT. OF NATURAL RESOURCES & CONSERVATION
RIMARY FUNDING AMOUNT:
1975 - 60,000
IME FRAME:
07 01 74 TO 06 30 75
OCATION:
MT
BSTRACT:
RESEARCH OBJECTIVE: TO DETERMINE ALL EXISTING WATER RIGHTS IN THE DESIGNATED AREA. TO PROVIDE FOR A CENTRALIZED RECORD OF ALL EXISTING WATER RIGHTS AND TO PROVIDE FOR A SYSTEM FOR THE REGULATION AND CONTROL OF WATER RIGHTS.

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00000429
PROJECT TITLE:
VIGIL NETWORK ESTABLISHMENT FOR EASTERN MONTANA COALFIELDS
PROJECT NUMBER:
WR-UM-005
INVESTIGATORS:
W. M. WEBER; R. R. CURRY
RESEARCH INSTITUTION:
UNIV. OF MONTANA, DEPT. OF GEOLOGY
MISSOULA, MT 59801
PRIMARY SPONSOR:
MONTANA DEPT. OF NATURAL RESOURCES & CONSERVATION
PRIMARY FUNDING AMOUNT:
1975 - 4,000
TIME FRAME:
10 01 74 TO 06 30 76
LOCATION:
MT
ABSTRACT:
RESEARCHERS AT THE UNIVERSITY OF MONTANA GEOLOGY DEPARTMENT ARE CURRENTLY UNDERTAKING HYDROLOGIC AND GEOMORPHIC RESEARCH IN THE YELLOWSTONE RIVER BASIN, FOCUSING ATTENTION ON THE TRUNK STREAM AND ITS MAJOR TRIBUTARIES. THE METHODOLOGY INVOLVES THE ESTABLISHMENT OF 20 VIGIL NETWORK SITES ON THE STREAMS. THESE SITES ARE CAREFULLY SURVEYED AND SOMETIMES INSTRUMENTED, TO ALLOW THE OBSERVATION OF MORPHOMETRIC CHANGE THROUGH TIME. SITE FILES WILL BE PREPARED DESCRIBING SITE LOCATION AND DETAILING THE PRESENT MORPHOMETRIC CHANGE THROUGH TIME. SITE FILES WILL BE PREPARED DESCRIBING SITE LOCATION AND DETAILING THE PRESENT MORPHOMETRIC AND VEGETATION STATUS. PHOTOGRAPHY OF THE SITES WILL BE INCLUDED. IT IS EXPECTED THAT DISRUPTION OF THE HYDROLOGIC REGIME OF THE WATERSHEDS WILL BE REFLECTED BY FACTORS SUCH AS CHANNEL SCOUR AND FILL, WIDENING OR CONSTRICTION OF CHANNELS, CHANGES IN RIPARIAN VEGETATION AND HILLSLOPE EROSION. COPIES OF FILES WILL BE SENT TO THE U.S. GEOLOGIC SURVEY AND THE STATE OF MONTANA AS WELL AS BEING RETAINED BY THE UNIVERSITY.

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00000430
PROJECT TITLE:
A SURVEY OF WATER COOLING METHODS FOR WESTERN NORTH DAKOTA

INVESTIGATORS:
A. G. FLETCHER
RESEARCH INSTITUTION:
UNIV. OF NORTH DAKOTA, ENG. EXP. STATION
GRAND FORKS, ND 58201
PRIMARY SPONSOR:
NORTH DAKOTA STATE WATER COMMISSION
PRIMARY FUNDING AMOUNT:
1975 - 73,954
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
ND
ABSTRACT:

WESTERN NORTH DAKOTA IS AN AREA OF RELATIVELY LOW ANNUAL RAINFALL AND, EXCEPT FOR THE MISSOURI RIVER AND A FEW IMPOUNDMENTS (GARRISON RESERVOIR), AN AREA WITH LIMITED AVAILABLE SURFACE WATER. PLANS SUCH AS THE WEST RIVER AND GARRISON DIVERSIONS HAVE BEEN PROPOSED TO DISTRIBUTE WATER AVAILABLE FROM GARRISON RESERVOIR TO AREAS WHICH LACK ADEQUATE SURFACE WATER. WITH THE PRESENT EMPHASIS ON EXTENSIVE UTILIZATION OF LIGNITE BY LARGE ELECTRICAL GENERATING UNITS AND GASIFICATION PLANTS WHICH REQUIRE MUCH WATER, THERE HAS BEEN INCREASING CONCERN WITH WATER DISTRIBUTION, WATER USAGE, AND WATER RIGHTS. MOST OF THE WATER CONSUMED BY THE ABOVE PLANTS IS USED TO COOL WASTE PROCESS HEAT. BECAUSE OF THE INTEREST IN THE ABOVE WATER USUAGE, THIS REPORT SURVEYS AVAILABLE INFORMATION ON COOLING METHODS WITH EMPHASIS ON CONDITIONS IN WESTERN NORTH DAKOTA. ESTIMATES OF COSTS AND WATER CONSUMPTION (EVAPORATION) ARE PRESENTED. OVERALL, COOLING PONDS APPEAR TO BE THE MOST FAVORABLE SELECTION FOR WESTERN NORTH DAKOTA IN TERMS OF COST, WATER CONSUMPTION, AND PRACTICABILITY. CONTROL OF SPRING FLOODING COULD BE PARTIALLY REALIZED BY PROPER UTILIZATION OF POND LEVELS.

TYPE OF STUDY:
PART OF "WEST RIVER STUDY," NORTH DAKOTA STATE WATER COMMISSION.
REPORTS AND PUBLICATIONS:
FINAL REPORT AND APPENDICES. WEST RIVER STUDY: ANALYSIS OF ALTERNATIVES FOR DEVELOPING AND MANAGING WEST RIVER AREAS WATER AND RELATED LAND RESOURCES. NORTH DAKOTA STATE WATER COMMISSION, 1975.

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00000431
PROJECT TITLE:
NORTHERN CHEYENNE WATER QUALITY PROJECT
INVESTIGATORS:
WILLIAM W. WOESSNER
NORTHERN CHEYENNE RESEARCH PROJECT
LAME DEER, MT
PROJECT SUPERVISOR:
CLARK JUDY
YELLOWSTONE-TONGUE APO
BOX 503
BROADUS, MT 59317
PRIMARY SPONSOR:
U.S. EPA
1860 LINCOLN ST.
DENVER, CO 80203
PRIMARY FUNDING AMOUNT:
50,000
TIME FRAME:
04 01 76 TO 08 31 77
LOCATION:
MT - NORTHERN CHEYENNE INDIAN RESERVATION
ABSTRACT:

THE STUDY WILL COLLECT AND INTERPRET WATER QUALITY DATA. THE LAND USE/WATER QUALITY RELATIONSHIPS WILL BE INVESTIGATED AND MANAGEMENT PRACTICES DEVELOPED, INCLUDING THOSE CONCERNED WITH ENERGY IMPACT IN THIS AREA.

TYPE OF STUDY:
PART OF "YELLOWSTONE-TONGUE WATER QUALITY MANAGEMENT PROJECT," YELLOWSTONE-TONGUE APO.
REPORTS AND PUBLICATIONS:
INTERIM REPORTS DUE LATE 1976.

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00000432
PROJECT TITLE:
NONPOINT SOURCE WATER QUALITY MANAGEMENT
INVESTIGATORS:
RAY CHORIKI
MONTANA TESTING LAB.
711 3RD ST. NW
GREAT FALLS, MT 59404
DANA SCHMIDT
OLSON-ELLIOTT & ASSOCIATES
349 LAST CHANCE GULCH
HELENA, MT 59601
PROJECT SUPERVISOR:
CLARK JUDY
YELLOWSTONE-TONGUE APO
P.O. BOX 503
BROADUS, MT 59317
PRIMARY SPONSOR:
U.S. EPA
1860 LINCOLN ST.
DENVER, CO 80203
PRIMARY FUNDING AMOUNT:
58,000

IME FRAME:
05 01 76 TO 04 30 77
OCATION:
MT
BSTRACT:
THE CONSULTANT IS TO DETERMINE THE EXTENT OF THE EXISTING NONPOINT SOURCE WATER QUALITY PROBLEMS AND RECOMMEND COST-EFFECTIVE CORRECTIVE MEASURES FOR THOSE PROBLEMS. STRUCTURAL AND NONSTRUCTURAL MANAGEMENT TECHNIQUES WILL BE DEVELOPED TO REDUCE THE ADVERSE WATER QUALITY IMPACTS OF FUTURE ENERGY DEVELOPMENTS IN THE AREA. A DATA BASE AND MANAGEMENT GUIDELINES WILL BE DEVELOPED FOR USE BY LOCAL AGENCIES.
THE CONSERVATION DISTRICTS WILL PARTICIPATE IN THE COLLECTION OF DATA AND THE DEVELOPMENT OF MANAGEMENT TECHNIQUES.
YPE OF STUDY:
PART OF "YELLOWSTONE-TONGUE WATER QUALITY MANAGEMENT PROJECT," YELLOWSTONE-TONGUE APO.
EPORTS AND PUBLICATIONS:
FINAL REPORT WILL BE AVAILABLE MAY, 1977.

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0000433
ROJECT TITLE:
WATER USE AND COAL DEVELOPMENT IN EASTERN MONTANA - WATER AVAILABILITY, WATER DEMANDS, AND ECONOMIC IMPACTS
ROJECT NUMBER:
CONTRACT C-5258 (OWRT)
NVESTIGATORS:
R. L. STROUP; S. G. TOWNSEND
ESEARCH INSTITUTION:
MONTANA STATE UNIV., DEPT. OF AG. ECONOMICS & ECONOMICS
BOZEMAN, MT 59715
RIMARY SPONSOR:
U.S. DEPT. OF INTERIOR, OFFICE OF WATER RESEARCH & TECH.
IME FRAME:
07 01 74 TO 06 30 75
OCATION:
MT
BSTRACT:
THE OBJECTIVES OF THE PROPOSED RESEARCH ARE: A. TO IDENTIFY THE FACTORS IMPORTANT IN DETERMINING THE SOCIAL COSTS AND BENEFITS OF WATER USE IN COAL DEVELOPMENT, B. TO SPECIFY A METHODOLOGICAL FRAMEWORK WITH WHICH TO INVESTIGATE AND ANALYZE THESE FACTORS FOR PLANNING AND PREDICTIVE PURPOSES, AND C. TO APPLY THIS METHODOLOGY AND EXISTING DATA FROM ALL AVAILABLE SOURCES IN EMPIRICAL INVESTIGATIONS OF THE SOCIAL COSTS AND BENEFITS OF POTENTIAL WATER USE IN COAL DEVELOPMENT AT EACH OF SEVERAL SELECTED EASTERN MONTANA SITES.
THE SPECIFICATION OF COSTS WOULD INCLUDE THE: 1. PHYSICAL AVAILABILITY; 2. LEGAL CONSTRAINTS; 3. DEVELOPMENT AND TRANSPORTATION COSTS; 4. OPPORTUNITY COSTS OF OTHER WATER USES FOREGONE; 5. POLLUTION LIKELY TO BE EXPERIENCED.
THE SPECIFICATION OF BENEFITS WOULD INCLUDE THE: 1. USES OF WATER IN COAL DEVELOPMENT; 2. ESTIMATION OF A DEMAND FUNCTION FOR WATER USED IN COAL DEVELOPMENT; 3. LOCATION OF DEMANDS IN TIME AND SPACE.
THESE FACTORS WILL BE INTEGRATED INTO A COST-BENEFIT FRAMEWORK WHICH WILL THEN BE APPLIED TO SPECIFIC SITES. SENSITIVITY TESTING OF VARIOUS PARAMETERS AND ASSUMPTIONS WILL BE CARRIED OUT.
TYPE OF STUDY:
RELATED TO MSU STUDY, "ESTIMATION OF AMENITY VALUES AS OPPORTUNITY COSTS FOR ENERGY-RELATED WATER USE IN MONTANA," SERIAL NO. 00000330, ERIS QUARTERLY REPORT VOL. 1, NO. 2.

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00000434
PROJECT TITLE:
THE WATER QUALITY AND AQUATIC INSECTS OF THE MUSSELSHELL RIVER, MONTANA
INVESTIGATORS:
MARK GORGES
PROJECT SUPERVISOR:
W. R. GOULD
MONTANA STATE UNIV., COOP. FISHERY RESEARCH UNIT
BOZEMAN, MT 59715
U.S. FISH & WILDLIFE SERV.
PRIMARY SPONSOR:
MONTANA DEPT. OF FISH & GAME
HELENA, MT 59601
PRIMARY FUNDING AMOUNT:
7,000
TIME FRAME:
06 01 74 TO 02 01 76
STATUS:
COMPLETED 02 01 76
LOCATION:
MT - MUSSELSHELL RIVER BETWEEN TWO DOT AND MELSTONE, MT
ABSTRACT:
PURPOSE: TO OBTAIN BASELINE DATA ON THE WATER QUALITY AND AQUATIC INSECTS OF THE RIVER BEFORE ANTICIPATED COAL DEVELOPMENT IN THE BULL MOUNTAINS COAL FIELD TAKES PLACE. SIX STATIONS, FROM TWO DOT AND MELSTONE, COVERING 300 KM. ON THE MUSSELSHELL RIVER WERE STUDIED.
REPORTS AND PUBLICATIONS:
MARK GORGES. M.S. THESIS. "THE BENTHIC INVERTEBRATES OF THE MUSSELSHELL RIVER, MONTANA."

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00000435
PROJECT TITLE:
POWDER RIVER ECOLOGY STUDY
INVESTIGATORS:
BRUCE REHWINKEL
MILES CITY, MT
RESEARCH INSTITUTION:
MONTANA DEPT. OF FISH AND GAME
HELENA, MT 59601
PRIMARY SPONSOR:
UTAH INTERNATIONAL, INC.
PRIMARY FUNDING AMOUNT:
25,000
TIME FRAME:
09 01 75 TO 08 01 76
LOCATION:
MT
ABSTRACT:
OBJECTIVES: 1. TO DETERMINE COMPOSITION, DISTRIBUTION, AND RELATIVE ABUNDANCE OF AQUATIC BIOTA OF THE POWDER RIVER. 2. TO IDENTIFY VARIOUS PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE POWDER RIVER AND ITS MAJOR TRIBUTARIES, AND 3. TO PREDICT AND EVALUATE THE IMPACT OF AN IMPOUNDMENT ON THE EXISTING POWDER RIVER BIOTA, AND TO PREDICT THE COMPOSITION, DISTRIBUTION, AND RELATIVE ABUNDANCE OF AQUATIC BIOTA WHICH MIGHT EXIST AS A RESULT OF AN IMPOUNDMENT.

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00000436
PROJECT TITLE:
ROSEBUD CREEK STUDY
INVESTIGATORS:
AL ELSER; JIM SCHREIBER
RESEARCH INSTITUTION:
MONTANA DEPT. OF FISH AND GAME
HELENA, MT 59601
PRIMARY SPONSOR:
U.S. EPA
PRIMARY FUNDING AMOUNT:
22,000
TIME FRAME:
09 01 75 TO 08 01 76
LOCATION:
MT
ABSTRACT:
OBJECTIVES: 1. TO DETERMINE SPECIES COMPOSITION, DISTRIBUTION, DIVERSITY, AND RELATIVE ABUNDANCE OF THE AQUATIC BIOTA OF ROSEBUD CREEK, AND 2. TO EVALUATE AND PREDICT POTENTIAL IMPACTS OF PROPOSED COAL DEVELOPMENT.

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00000437
PROJECT TITLE:
GEOLOGY AND GROUND WATER RESOURCES OF BILLINGS, GOLDEN VALLEY, AND SLOPE COUNTIES, PART I
PROJECT SUPERVISOR:
C. G. CARLSON
NORTH DAKOTA GEOLOGICAL SURVEY
GRAND FORKS, ND 58201
COOPERATOR:
NORTH DAKOTA WATER COMMISSION; U.S. GEOLOGICAL SURVEY,
COORDINATOR:
WATER RESOURCES DIV.
PRIMARY SPONSOR:
NORTH DAKOTA GEOLOGICAL SURVEY
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
ND
ABSTRACT:
THIS REPORT IS MAINLY CONCERNED WITH THE UPPER CRETACEOUS AND TERTIARY FORMATIONS WHICH ARE EXPOSED IN THESE COUNTIES. IT IS PRIMARILY CONCERNED WITH THE STRATIGRAPHY AS RELATED TO GROUND WATER POTENTIAL, BUT IS ALSO INTENDED TO HELP EVALUATE THE LIGNITE RESOURCES OF THE AREA.
TYPE OF STUDY:
PART OF COUNTY GROUNDWATER STUDIES - COOPERATIVE EFFORTS BETWEEN U.S. GEOLOGICAL SURVEY, NORTH DAKOTA WATER COMMISSION, NORTH DAKOTA GEOLOGICAL SURVEY, AND COUNTY WATER MANAGEMENT DISTRICTS.

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00000438
PROJECT TITLE:
FEASIBILITY OF DIVERTING WATER FROM LAKE SAKAKAWEA
RESEARCH INSTITUTION:
NORTH DAKOTA STATE WATER COMMISSION
BISMARCK, ND
PRIMARY SPONSOR:
NORTH DAKOTA STATE WATER COMMISSION
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
ND

BSTRACT:
THE NORTH DAKOTA STATE WATER COMMISSION IS NOW IN ITS THIRD YEAR OF A STUDY TO DETERMINE THE FEASIBILITY OF DIVERTING WATER FROM LAKE SAKAKAWEA TO THE 14-COUNTY AREA LYING SOUTH AND WEST OF THE MISSOURI RIVER IN NORTH DAKOTA. THIS STUDY TAKES INTO CONSIDERATION ALL WATER USES, INCLUDING ENERGY DEVELOPMENT.
YPE OF STUDY:
PART OF "WEST RIVER STUDY," NORTH DAKOTA STATE WATER COMMISSION.
EPORTS AND PUBLICATIONS:
FINAL REPORT AND APPENDICES. WEST RIVER STUDY: ANALYSIS OF ALTERNATIVES FOR DEVELOPING AND MANAGING WEST RIVER AREAS, WATER AND RELATED LAND RESOURCES. NORTH DAKOTA STATE WATER COMMISSION, 1975.

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0000439
ROJECT TITLE:
MID-YELLOWSTONE WATER QUALITY MANAGEMENT PROJECT (EPA 208)
ROJECT SUPERVISOR:
ALLEN BOND, DIRECTOR
MID-YELLOWSTONE AREAWIDE PLANNING ORGANIZATION
3300-2ND AVE. N. - SUITE 2
BILLINGS, MT 59101
RIMARY SPONSOR:
U.S. EPA
1869 LINCOLN ST.
DENVER, CO 80203
RIMARY FUNDING AMOUNT:
735,000
IME FRAME:
01 01 76 TO 12 30 77
OCATION:
MT - BIGHORN, CARBON, YELLOWSTONE, STILLWATER, AND SWEETGRASS COUNTIES - CROW INDIAN RESERVATION
BSTRACT:
FROM A WATER QUALITY STANDPOINT THE AREA IS DIVERSE, WITH COAL DEPOSITS AND STRIP MINING IN BIGHORN COUNTY, MONTANA'S LARGEST METROPOLITAN AREA IN BILLINGS, THREE MAJOR OIL REFINERIES IN BILLINGS AND LAUREL, AND A MIX OF RURAL LAND RANGING FROM FOREST LAND IN THE MOUNTAINOUS WESTERN AREAS TO IRRIGATION AND RANGELAND THROUGHOUT THE AREA. THREE CURRENT LAND USES - RECREATION, ENERGY DEVELOPMENT, AND SUBDIVISION ACTIVITY - WILL BE STUDIED IN RELATION TO WATER QUALITY DEGRADATION. LAND USE POLICIES AND REGULATIONS TO GUIDE FUTURE GROWTH AND DEVELOPMENT WILL BE DEVELOPED.

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00000440
PROJECT TITLE:
WATER CONSERVATION ON RANGELANDS?AND MINE SPOILS OF THE NORTHERN PLAINS
INVESTIGATORS:
GERALD SCHUMAN, GENE HOWARD
U.S. AG. RESEARCH SERVICE
RT. 1, BOX 698
CHEYENNE, WY 82001
PROJECT SUPERVISOR:
FRANK RAUZI
U.S. AG. RESEARCH SERVICE
UNIV. OF WYOMING
LARAMIE, WY 82071
PRIMARY SPONSOR:
U.S. AG. RESEARCH SERVICE, WATER CONSERVATION & RANGELAND RES.
UNIV. OF WYOMING
LARAMIE, WY 82071
PRIMARY FUNDING AMOUNT:
38,000
TIME FRAME:
08 18 70 TO 09 12 76
LOCATION:
WY MT ND SD
ABSTRACT:
OBJECTIVES: DEVELOP METHODS AND SYSTEMS FOR MAXIMIZING WATER CONSERVATION FOR PLANT USE ON RANGELANDS AND MINE SPOILS. APPROACH: THE RESPONSE OF INTRODUCED GRASSES AND LEGUMES TO CHANGES IN SOIL WATER AS AFFECTED BY SNOW TRAPPING, CONTROLLING SNOWMELT, AND THE PREVENTION OF RUNOFF ON LEVEL BENCHES WILL BE DETERMINED ON RANGELAND AND MINE SPOILS. SURFACE AND SUBSOIL PROPERTIES OF SELECTED MINE SPOILS WILL BE CHARACTERIZED AND APPROPRIATE SOIL MODIFICATIONS STUDIED TO OPTIMIZE PLANT ESTABLISHMENT AND GROWTH. CHANGES IN YIELD AND COMPOSITION OF NATIVE PASTURES RESULTING FROM FERTILIZATION, STRIP SPRAYING WITH A NONSELECTIVE HERBICIDE AND RESEEDING WITH ADAPTED SPECIES IN THE SPRAYED STRIP WILL BE ASSESSED.
REPORTS AND PUBLICATIONS:
F. RAUZI. SEASONAL YIELD AND CHEMICAL COMPOSITION OF CRESTED WHEATGRASS IN SOUTHEASTERN WYOMING. JOUR. OF RANGE MANAGEMENT, MAY 1975.

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00000441
PROJECT TITLE:
ENVIRONMENTAL EFFECTS FROM LEACHING OF COAL CONVERSION BY-PRODUCTS
PROJECT SUPERVISOR:
WAYNE VAN METER; RONALD ERICKSON
UNIV. OF MONTANA
MISSOULA, MT
PRIMARY SPONSOR:
U.S. ERDA
PRIMARY FUNDING AMOUNT:
74,948
TIME FRAME:
06 17 75 TO 06 17 78
LOCATION:
MT ND WY
ABSTRACT:

WE PROPOSE HERE TO CONDUCT TESTS WHICH WILL CHARACTERIZE THE ASH AND SLAG MATERIALS WITH REGARD TO THE AMOUNTS OF THE MORE TOXIC CHEMICAL ELEMENTS THAT WILL BE RELEASED, AND THE RATES AT WHICH THAT RELEASE OCCURS. SELECTION OF ELEMENTS WE FEEL ARE LIKELY TO BE LEACHED IN HAZARDOUS QUANTITY FROM LANDFILL ASH DUMPS HAS BEEN MADE FROM THESE TABULATIONS UNDER THE FOLLOWING CRITERIA: A. THE RELATIVE TOXICITY OF THE ELEMENT, B. THE RELATIVE CONCENTRATION OF THE ELEMENT IN THE COAL, AND C. THE THE LIKELIHOOD THAT THE ELEMENT WILL REMAIN IN THE ASH. THE FINAL OBJECTIVE OF THIS PROPOSAL IS SIMPLY TO TRY TO EXPEDITE THE USE OF FT. UNION FORMATION COAL IN ONE OR MORE OF THE GASIFICATION OR LIQUEFACTION PILOT PLANTS.

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00000442
PROJECT TITLE:
ESTIMATION OF AESTHETIC DAMAGES OF AIR POLLUTION FROM COAL BURNING POWER PLANTS
INVESTIGATORS:
THOMAS D. CROCKER
PROJECT SUPERVISOR:
RALPH C. D'ARGE
UNIV. OF WYOMING, DEPT. OF ECONOMICS
LARAMIE, WY 82071
PRIMARY SPONSOR:
ELECTRIC POWER RESEARCH INST., ENV. & CONSERVATION DIV.
3412 HILLVIEW AVE.
P.O. BOX 10412
PALO ALTO, CA 94303
PRIMARY FUNDING AMOUNT:
75,545
TIME FRAME:
03 01 76 TO 03 01 77
LOCATION:
FARMINGTON-SHIPROCK, NM; LARAMIE, WY
ABSTRACT:

1. DEVELOP A CONCEPTUAL APPROACH BASED ON MICRO-ECONOMIC THEORY TO MEASURE MONETARY DAMAGES ASSOCIATED WITH REDUCED VISIBILITY AND OTHER ENVIRONMENTAL AMENITIES INDUCED BY AIR POLLUTANTS FROM COAL-FIRED ELECTRIC GENERATING PLANTS. THE CONCEPTUAL APPROACH WILL INVOLVE APPLICATION OF NON-MARKET VALUATION TECHNIQUES INCLUDING HEDONIC PRICE INDICES AND DYNAMIC LEARNING HYPOTHESES.
2. TEST HYPOTHESES ON MODELS DEVELOPED BY COLLECTING PRIMARY DATA FOR ONE LOCATION AFFECTED BY AIR POLLUTANTS FROM COAL-FIRED PLANTS. THE LOCATION IS FARMINGTON-SHIPROCK, NEW MEXICO. PRIMARY DATA WILL BE COLLECTED FOR ONE BROAD CLASS OF ANTICIPATED IMPACTS AND, WHERE NECESSARY, 'PERCEIVED' HEALTH EFFECTS.
3. EXAMINE HOW USEFUL THESE DAMAGE METHODOLOGIES AND ESTIMATES WOULD BE FOR EVALUATION IN OTHER LOCATIONS.
4. PRIMARY DATA COLLECTION WILL REQUIRE EXTENSIVE SURVEY SAMPLING AT THE LOCATION. THE SURVEYS WOULD BE PRETESTED IN THE SPRING OF 1976 AND THE FULL SAMPLE COLLECTED DURING THE SUMMER OF 1976.

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00000443
PROJECT TITLE:
DRAFT ENVIRONMENTAL STATEMENT, CROW CEDED AREA COAL LEASE, TRACTS II AND III, WESTMORELAND RESOURCES
PROJECT SUPERVISOR:
DAVID W. PENNINGTON
U.S. BUREAU OF INDIAN AFFAIRS
316 NORTH 26TH ST.
BILLINGS, MT 59101
COOPERATOR:
U.S. GEOLOGICAL SURVEY
COORDINATOR:
U.S. FISH & WILDLIFE SERV.
CROW TRIBE
PRIMARY SPONSOR:
U.S. BUREAU OF INDIAN AFFAIRS
TIME FRAME:
12 15 75 TO 08 30 76
LOCATION:
MT - BIGHORN CO
ABSTRACT:

THE STATEMENT DISCUSSING THE ENVIRONMENTAL EFFECTS OF COAL DEVELOPMENT BY WESTMORELAND RESOURCES ON TRACTS II

AND III, CROW CEDED AREA.

EPORTS AND PUBLICATIONS:

FINAL REPORT AVAILABLE APPROXIMATELY MAY 14, 1976 FROM U.S. BUREAU OF INDIAN AFFAIRS, BILLINGS, MONTANA.

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0000444

ROJECT TITLE:

AN EVALUATION OF THE ENVIRONMENTAL IMPACT OF THE EXISTING SURFACE MINING METHODS FOR WESTERN COAL MINES

ROJECT NUMBER:

68-03-2226

NVESTIGATORS:

WILLIAM S. KELLY
MATHEMATICA, INC., MATHTECH DIVISION
P.O. BOX 2392
PRINCETON, NJ 08540
PETER BRIGGS
HITTMAN ASSOCIATES, INC.
9190 RED BRANCH ROAD
COLUMBIA, MD 21045

RIMARY SPONSOR:

U.S. EPA, CINCINNATI NAT. ENV. RESEARCH CENTER
S. JACKSON HUBBARD
CINCINNATI, OH 45268

RIMARY FUNDING AMOUNT:

173,000

IME FRAME:

07 01 75 TO 09 01 76

OCATION:

NM CO WY MT ND

BSTRACT:

THE OBJECTIVES OF THE STUDY ARE TWOFOLD. THE FIRST IS TO ASSESS THE ENVIRONMENTAL DAMAGES THAT RESULT FROM STRIP MINING IN THE WESTERN COAL FIELD AND TO RANK THEM IN ORDER OF SEVERITY. THIS ASSESSMENT IS BASED UPON DIRECT OBSERVATIONS OF NINE WESTERN MINES, SUPPLEMENTED BY LITERATURE SURVEYS AND PERSONAL INTERVIEWS.

THE SECOND OBJECTIVE IS TO IDENTIFY NEW PRODUCTION/RECLAMATION PLANNING, OPERATION AND EQUIPMENT CONCEPTS WHOSE USE WOULD REDUCE ENVIRONMENTAL DAMAGE, AND TO EVALUATE THE ECONOMIC AND ENVIRONMENTAL COSTS AND BENEFITS AND THE ENGINEERING PRACTICABILITY OF THOSE CONCEPTS.

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0000445

OJECT TITLE:

ROUNDUP UNDERGROUND COAL MINE PRODUCTION

OJECT NUMBER:

C-302

INVESTIGATORS:

GLENN JOHNSON
WESTERN COAL CO.
803 1ST ST. WEST
ROUNDUP, MT 59072

PROJECT SUPERVISOR:

RALPH GILDROY
CENTRAL MONTANA DIST. SIX COUNCIL
BOX 302
ROUNDUP, MT 59072

PRIMARY SPONSOR:

CENTRAL MONTANA DIST. 6 COUNCIL

TIME FRAME:

12 03 75 TO 06 15 76

LOCATION:

MT - MUSSELSHELL CO., BULL MOUNTAIN COAL FIELD

ABSTRACT:

PROBLEM: NEGATIVE ENVIRONMENTAL IMPACT OF SURFACE (STRIP) MINING OF THE MAMMOUTH VEIN OF THE BULL MOUNTAIN COAL FIELD. STATE LAW PERTINENT TO CONTOUR STRIP MINING IS A DETERRENT TO ANY SURFACE MINING. IN ADDITION, SOME COUNTY RESIDENTS ENGAGED IN AGRICULTURE FEAR SURFACE DISTURBANCES MAY HAVE DELETERIOUS EFFECTS ON FARMING AND RANCHING OPERATIONS.

OBJECTIVES: MINIMIZE NEGATIVE ENVIRONMENTAL IMPACT. INVESTIGATE FEASIBILITY OF UNDERGROUND COAL MINING OPERATIONS IN BULL MOUNTAIN FIELD.

APPROACH: EXPLORE LEASING POTENTIALS; MINERAL OWNERSHIPS; MINE ENTRY LOCATIONS; ESTABLISH DISTANCES AND COSTS TO RAIL HEAD; ESTIMATED PRODUCTION; TYPE OF PRODUCTION; UNDERGROUND AND SURFACE REQUIREMENTS AND EQUIPMENT; PERSONNEL, WAGE AND FRINGE; NUMBER OF SHIFTS; OPERATING COSTS; TOTAL COSTS AND COST PER TON AT MINE SITE AND ON RAIL; ESTIMATED TONNAGE PER ACRE; ANALYSES OF TWO COAL SEAMS; PRELIMINARY CONSIDERATION OF MINING THREE COAL SEAMS.

REPORTS AND PUBLICATIONS:

"MINE ROUNDUP". AVAILABLE FROM RALPH GILDROY, C-302, JUNE 15, 1976, CENTRAL MONTANA DISTRICT SIX COUNCIL BOX 302, ROUNDUP, MONTANA 59072.

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0000446

PROJECT TITLE:

THE EFFECTS OF THE WITHDRAWAL OF COOLING WATER FROM AND DISCHARGE OF HEATED COOLING WATER INTO THE MISSOURI RIVER

PROJECT NUMBER:

CONTRACT 605

PROJECT SUPERVISOR:

JOE K. NEEL

UNIV. OF NORTH DAKOTA, DEPT. OF BIOLOGY
GRAND FORKS, ND 58202
PRIMARY SPONSOR:
BASIN ELECTRIC POWER COOPERATIVE
DUANE BYE
1717 EAST INTERSTATE AVE.
BISMARCK, ND 58501
PRIMARY FUNDING AMOUNT:
60,000
TIME FRAME:
05 15 75 TO 05 15 77
LOCATION:
ND - MISSOURI RIVER, MERCER CO., SEC. 21, T144N, R84W, VICINITY OF LELAND OLDS STATION 4 MILES SOUTHEAST OF STANTON, ND.
ABSTRACT:
THE PURPOSE OF THE STUDY IS TO DETERMINE WHETHER THE COMBINED THERMAL DISCHARGES FROM THE ONCE-THROUGH COOLING SYSTEMS AT LELAND OLDS UNITS 1 AND 2 HAVE ANY EFFECT ON THE PHYSICAL, BIOLOGICAL AND CHEMICAL PROPERTIES OF THE MISSOURI RIVER.

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00000447
PROJECT TITLE:
ACID MINE DRAINAGE CONTROL - FEASIBILITY STUDY
INVESTIGATORS:
M. MILLER
RESEARCH INSTITUTION:
MONTANA COLLEGE OF MINERAL SCIENCES AND TECHNOLOGY
BUTTE, MT 59701
PRIMARY SPONSOR:
MONTANA DEPT. OF NATURAL RESOURCES & CONSERVATION
PRIMARY FUNDING AMOUNT:
1974 - 4,000 ; 1975 - 11,000
TIME FRAME:
08 01 73 TO 09 01 75
LOCATION:
MT
ABSTRACT:
1. TO IDENTIFY THE GEOLOGY AND HYDROLOGIC SYSTEM PRESENT IN THE STUDY AREA, AND TO DEFINE THEIR CONTROL ON THE FORMATION AND MIGRATION OF ACID MINE WATERS. 2. TO FORMULATE AND EVALUATE POSSIBLE TECHNIQUES FOR MITIGATING OR REDUCING THE DEGRADATION RESULTING FROM ACID DRAINAGE. 3. TO RECOMMEND THE TECHNIQUE PROVIDING THE MOST LASTING, BENEFICIAL AND ECONOMIC RESULTS IN PREVENTING FURTHER CONTAMINATION AND TO IMPROVE THE PRESENT WATER QUALITY.

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00000448
PROJECT TITLE:
QUANTIFY AIR POLLUTION VEGETATION EFFECTS, VISIBILITY AND PARTICULATE TYPES AND CONCENTRATIONS
INVESTIGATORS:
A. C. HILL; W. H. EDWARDS; W. O. URSENBACH
RESEARCH INSTITUTION:
UNIV. OF UTAH, RESEARCH INSTITUTE
ENVIRONMENTAL STUDIES LAB.
SALT LAKE CITY, UT 84112
PRIMARY SPONSOR:
UTAH POWER & LIGHT CO.; SOUTHERN CALIFORNIA EDISON CO.; ARIZONA PUBLIC SERVICE CO.
PRIMARY FUNDING AMOUNT:
1973 - 235,000 ; 1974 - 300,000; 1975 - 395,000
TIME FRAME:
01 01 70 TO INDEFINITE
LOCATION:
UT AZ NM NE CO WY
ABSTRACT:
MEASUREMENT OF EFFECTS OF GASEOUS POLLUTANTS SUCH AS SULFUR DIOXIDE AND NITROGEN OXIDES ON NATIVE AND CULTIVATED VEGETATION, OBSERVATION OF LONG TERM GROWTH VARIATION IN NATIVE VEGETATION, EVALUATION OF ANALYTICAL METHODS FOR NEAR-BACKGROUND CONCENTRATIONS TO AMBIENT AIR QUALITY STANDARDS OF GASEOUS POLLUTANTS. MEASUREMENT OF PARTICULATE MASS CONCENTRATION, SIZE DISTRIBUTION AND PARTICLE TYPES SUCH AS FLY ASH, SUSPENDED SOIL DUST, SOOT, AND SULFATE PARTICLES FROM SUB-MICRON TO ABOUT 12 MICRONS DIAMETER. ESTIMATION OF THE EFFECT OF THE PARTICULATES ON VISIBILITY. DETERMINATION OF NATURAL OR BACKGROUND CONCENTRATIONS OF PARTICULATES IN REMOTE AREAS OF THE ARID WEST. SCANNING ELECTRON MICROSCOPY AND ENERGY DISPERSIVE X-RAY ANALYSES OF PARTICULATES COLLECTED NEAR COAL FIRED POWER PLANTS AND AT REMOTE LOCATIONS. DETERMINATION OF THE IMPACT OF COAL FIRED POWER PLANTS.

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00000449
PROJECT TITLE:
ATMOSPHERIC CONTAMINATION EFFECT ON PLANT AND ANIMAL LIFE
PROJECT NUMBER:
CONTRACT 602
INVESTIGATORS:
LAWRENCE L. LOENDORF; ROBERT W. SEABLOOM; RICHARD J.

[illegible]LTOSLERGER, L. ELLIOT SCHUBERT; MOHAN K. WALI
PROJECT SUPERVISOR:
PAUL E. KANNOWSKI
UNIV. OF NORTH DAKOTA, INST. FOR ECOLOGICAL STUDIES
GRAND FORKS, ND 58202
PRIMARY SPONSOR:
BASIN ELECTRIC POWER COOPERATIVE
DUANE BYE
1717 EAST INTERSTATE AVE.
BISMARCK, ND
PRIMARY FUNDING AMOUNT:
FY 73 - 25,500 ; FY 74 - 7,000
TIME FRAME:
06 14 72 TO 06 01 74
LOCATION:
ND, MERCER CO., SECTION 21, T144N, RP4W, VICINITY OF LELAND OLDS STATION 4 MILES SOUTHEAST OF STANTON, ND
ABSTRACT:

PART I - INVERTEBRATE INVENTORY
SPECIMENS WERE COLLECTED AT FOUR SITES REPRESENTING FOUR UTILIZATION TYPES. PRIMARY COLLECTION METHOD WAS SWEEP-NET METHOD, SUPPLEMENTED BY USE OF BLACKLIGHT, MODIFIED BERLAZI TRAPS AND HAND COLLECTION.

PART II - ARCHAEOLOGICAL INVESTIGATION
TWO PRIMARY SITES NEAR THE LELAND OLDS STATION - THE BIG WHITE AND UNNAMED SITES - WERE EXAMINED TO DETERMINE THE RELATIONSHIP BETWEEN THE TWO SITES. SOME SALVAGE OPERATIONS WERE ALSO CONDUCTED AT 8-10 TRANSMISSION FOOTING SITES.

PART III - VERTEBRATE INVENTORY AND TRACE ELEMENT ANALYSIS OF SMALL MAMMALS
SPECIMENS WERE COLLECTED OVER 1,600 TRAP-NIGHTS AT SITES IDENTIFIED IN A PREVIOUS AIR MONITORING STUDY AND AT A CHECK SITE IN THE RIVERDALE GAME MANAGEMENT AREA. SPECIMENS OF HAIR, LIVER AND SKIN WERE PREPARED BY A WET ASH PROCESS AND ANALYZED BY ATOMIC ABSORPTION FOR MERCURY, LEAD, MOLYBDENUM, CADMIUM AND SELENIUM.

PART IV - TRACE ELEMENT ANALYSIS OF SOILS AND VEGETATION
SAMPLING SITES WERE ESTABLISHED ALONG TRANSECTS ORIGINATING AT LELAND OLDS STATION AND FORMING A 2 1/2 MILE SEMICIRCLE FROM NORTH OF THE PLANT TO SOUTH, WITH TWO TRANSECTS TO THE NORTHWEST AS A CHECK. SAMPLES WERE TAKEN OF LITTER, HUMUS, A-LAYER, PLANT WASH AND PLANT SAMPLES. MEANS FOR EACH VARIABLE WERE DETERMINED FOR FOUR DISTANCE CLASSES, SEVEN DIRECTION CLASSES AND FOUR VEGETATION GROUPS. SAMPLES WERE ANALYZED FOR CALCIUM, MAGNESIUM, POTASSIUM, SODIUM, MANGANESE, ALUMINUM, COPPER, IRON, LITHIUM, LEAD, SILICON, STRONTIUM, ZINC, SULFATE, CHLORINE, PHOSPHORUS, PH AND CONDUCTIVITY.

OVERALL OBJECTIVE WAS TO DETERMINE ANY EFFECTS ON THE ENVIRONMENT RESULTING FROM STACK EFFLUENTS.

REPORTS AND PUBLICATIONS:
MOHAN K. WALI AND ALDEN KOLLMAN. "CHEMICAL INVESTIGATION OF SOILS AND PLANTS AROUND TWO COAL FIRED POWER PLANTS NEAR STANTON, ND." RESEARCH REPORT 12. DECEMBER, 1975. LAWRENCE L. LOENDORF AND DENNIS E. JOHNSON. "ARCHAEOLOGICAL INVESTIGATIONS AT TWO SITES, 32ME4 AND 32ME203, NEAR STANTON, ND." RESEARCH REPORT 12, MARCH, 1976. AVAILABLE FROM BASIN ELECTRIC POWER COOPERATIVE TO LIMITED QUANTITIES.

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00000450
PROJECT TITLE:
RANKING OF WILDLIFE VALUES ON FEDERAL COAL LANDS
INVESTIGATORS:
JAMES WAMBAUGH
PROJECT SUPERVISOR:
ROBERT R. MARTINKA
MONTANA DEPT. OF FISH & GAME
HELENA, MT 59601
PRIMARY SPONSOR:
U.S. FISH & WILDLIFE SERV.
JAMES C. SALINAS
711 CENTRAL AVE.
BILLINGS, MT 59102
PRIMARY FUNDING AMOUNT:
25,580
TIME FRAME:
04 30 76 TO 04 01 77
LOCATION:
MT - MCCONE CO., GALLATIN CO., ROSEBUD CO., RICHLAND CO., WIBAUX CO., POWDER RIVER CO., CUSTER CO., AND POWDER RIVER BASIN
ABSTRACT:
OBJECTIVE: TO RANK THE TERRESTRIAL WILDLIFE VALUES OF LAND UNDERLAID BY FEDERAL COAL, AND TO USE THESE RANKINGS TO DRAFT NOMINATIONS FOR OR AGAINST LEASING.

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00000451
PROJECT TITLE:
NORTHERN GREAT PLAINS WIND MEASUREMENT PROGRAM
INVESTIGATORS:
B. G. HERRIN
RESEARCH INSTITUTION:
PHILCO FORD CORP.
214 N. 29TH ST.
BILLINGS, MT 59101
PRIMARY SPONSOR:
U.S. EPA, OFFICE OF RESEARCH & DEV.
TIME FRAME:
07 01 74 TO 06 30 75

LOCATION:
MT WY ND
ABSTRACT:
THE OBJECTIVE OF THIS PROJECT IS TO PROVIDE FOR THE ACQUISITION OF UPPER AIR DATA (WIND SPEED AND WIND DIRECTION AT 30 METERS) AT THREE RURAL SITES IN MONTANA, WYOMING, AND NORTH DAKOTA FOR A PERIOD OF TWELVE MONTHS. PHILCO-FORD, THE CONTRACTOR, WILL INSTALL AND MAINTAIN THE WIND INSTRUMENTATION, AND COLLECT AND REDUCE THE DATA RECORDINGS. THE RESULTING DAILY WIND INFORMATION WILL BE USED BY EPA IN REFINING POINT SOURCE AND REGIONAL POLLUTANT DIFFUSION MODELS NECESSARY FOR THE PREDICTION OF AIR QUALITY IMPACTS OF COAL RESOURCE DEVELOPMENT.

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00000452
PROJECT TITLE:
PROFILING TRACE ELEMENTS IN RESOURCES AND PROCESSES INVOLVING WATER, COAL AND AIR
PROJECT NUMBER:
CONTRACT C-6307 (OWRT)
INVESTIGATORS:
D. TALLMAN; J. KNOECK; J. C. GLASS; R. D. KOOB; D. DOYLE
RESEARCH INSTITUTION:
NORTH DAKOTA STATE UNIV., DEPT. OF CHEMISTRY
FARGO, ND 58102
PRIMARY SPONSOR:
U.S. DEPT. OF INTERIOR, OFFICE OF WATER RESEARCH & TECH.
PRIMARY FUNDING AMOUNT:
FY 75 - 31,600
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
ND
ABSTRACT:
THE DEVELOPMENT OF COAL GASIFICATION PLANTS IN THE WEST RIVER REGION ENCOMPASSING THE SOUTHWESTERN ONE-THIRD OF NORTH DAKOTA IS CERTAIN TO HAVE AN IMPACT ON THE WATER QUALITY OF THAT REGION. THE PROPOSED RESEARCH INVOLVES DETERMINING THE TRACE METAL COMPOSITION OF THE LIGNITE COAL MINED IN THIS REGION AND ESTABLISHING THE EXTENT TO WHICH SUCH CONSTITUENTS ARE TRANSFERRED FROM THE LIGNITE TO THE WATER USED IN THE GASIFICATION PROCESS. THE TECHNIQUES OF ATOMIC ABSORPTION SPECTROPHOTOMETRY, ANODIC STRIPPING VOLTAMMETRY, AND X-RAY FLUORESCENCE SPECTROMETRY WILL BE EMPLOYED TO DETERMINE THE TRACE METAL COMPOSITION OF 1. REGIONAL WATER PRIOR TO UTILIZATION IN THE GASIFICATION PROCESS. 2. LIGNITE COAL MINED IN THE REGION. 3. RESIDUE REMAINING AFTER GASIFICATION. 4. REGIONAL WATERS AFTER UTILIZATION IN THE GASIFICATION PROCESS. 5. STACK EMISSIONS FROM GASIFICATION PLANT.
FROM SUCH ANALYSES, A TRACE METAL PROFILE WILL BE DEVELOPED FOR THE GASIFICATION PROCESS AND THE IMPACT OF COAL GASIFICATION ON THE TRACE METAL CONTENT OF WATER IN THE WEST RIVER WILL BE ASSESSED.

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00000453
PROJECT TITLE:
EFFECTS OF AIR POLLUTION ON EPIPHTYIC CRYPTOGRAMS
PROJECT NUMBER:
GB-42179 (NSF)
INVESTIGATORS:
G. R. HOFFMAN
RESEARCH INSTITUTION:
UNIV. OF SOUTH DAKOTA, DEPT. OF BIOLOGY
VERMILLION, SD 57069
PRIMARY SPONSOR:
NATIONAL SCIENCE FOUNDATION, DIV. OF BIOLOGICAL & MED. SCI.
PRIMARY FUNDING AMOUNT:
FY 75 - 14,750
TIME FRAME:
03 01 75 TO 02 01 76
LOCATION:
SD MT WY MN
ABSTRACT:
THIS PROJECT WILL UTILIZE THE KNOWN SENSITIVITY OF EPIPHYTIC LICHENS AND BRYOPHYTES TO AIR POLLUTANTS TO EVALUATE THE EXTENT OF THE AIR POLLUTION (CHIEFLY SULFUR DIOXIDE) CREATED BY THE LIGNITE-BURNING POWER GENERATOR THAT WILL BEGIN OPERATION IN 1975. UNLIKE ANY PREVIOUS EVALUATIONS OF AIR POLLUTION USING EPIPHYTIC LICHENS AS INDICATORS, THIS PROJECT WILL DETERMINE THE PRIOR DISTRIBUTION OF THE EPIPHYTIC VEGETATION IN ESSENTIALLY AIR POLLUTION-FREE NORTHERN PRAIRIE AREAS. THIS WILL BE ESTABLISHED IN A BROAD TRANSECT ACROSS SOUTH DAKOTA FROM MIDDLE MINNESOTA TO THE EASTERN WYOMING AND MONTANA. EFFORTS WILL BE CONCENTRATED, HOWEVER, IN THE BROAD AREA AROUND THE OTTER TAIL POWER GENERATOR AND WILL INCLUDE BOTH STEM AND CANOPY EPIPHYTES. ANY CHANGES IN THE EPIPHYTIC FLORA AFTER THE POLLUTION BEGINS CAN, THEREFORE, BE COMPARED WITH THE BASELINE VEGETATION WITH LITTLE AIR POLLUTION.

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00000454
PROJECT TITLE:
PLANETARY BOUNDARY LAYER OBSERVING FACILITY
PROJECT NUMBER
DES75-03200 (NSF)

INVESTIGATORS:
J. D. MARWITZ
RESEARCH INSTITUTION:
UNIV. OF WYOMING, DEPT. OF ATMOSPHERIC SCIENCE
P.O. BOX 3435, UNIV. STATION
LARAMIE, WY 82070
PRIMARY SPONSOR:
NATIONAL SCIENCE FOUNDATION, DIV. OF ENV. SCIENCES
PRIMARY FUNDING AMOUNT:
FY 75 - 28,700
TIME FRAME:
03 01 75 TO 08 31 75
LOCATION:
WY
ABSTRACT:

THIS GRANT IS FOR A PLANETARY BOUNDARY LAYER (PBL) OBSERVING FACILITY. THE FACILITY WILL PRIMARILY BE USED TO EXAMINE THE UNIQUE PBL WHICH OCCURS AROUND THE MOUNTAINS OF WYOMING. THIS IS OF CRITICAL IMPORTANCE BECAUSE OF THE RAPID DEVELOPMENT OF SEVERAL COAL FIRED THERMAL-ELECTRIC AND COAL GASIFICATION PLANTS WHICH ARE BEING BUILT AND EXPECTED TO BE BUILT IN THIS REGION. THE PBL OBSERVING FACILITY WILL CONSIST OF: A. RADIO CONTROLLED DRONE AIRCRAFT WITH AN ON-LINE MINI-COMPUTER FOR CALCULATION AND DISPLAY OF STATE PARAMETERS, MONOSTRATIC ACOUSTIC ECHO SOUNDER AND C. KYTOON SYSTEM. THE SYSTEM WILL BE HOUSED IN A SPECIALLY BUILT MOBILE CAMPER AND WILL SUPPLEMENT THE DEPARTMENT OF ATMOSPHERIC SCIENCE'S EXISTING INSTRUMENTED QUEEN AIR AIRCRAFT.

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00000455
PROJECT TITLE:
PREDICTED IMPACT OF COAL DEVELOPMENT ON THE FISHERY RESOURCES OF THE TONGUE RIVER RESERVOIR, MONTANA
INVESTIGATORS:
R. PENKAL
PROJECT SUPERVISOR:
R. W. GREGORY
MONTANA STATE UNIV., COOP. FISHERY RESEARCH UNIT
BOZEMAN, MT 59715
PRIMARY SPONSOR:
U.S. FISH & WILDLIFE SERV.
SECONDARY SPONSORS:
U.S. EPA
PRIMARY FUNDING AMOUNT:
FY 75 - 4,150
SECONDARY FUNDING AMOUNTS:
17,000
TIME FRAME:
07 01 75 TO 07 01 78
LOCATION:
MT
ABSTRACT:

TO MEASURE STANDING CROPS, REPRODUCTIVE SUCCESS AND GROWTH RATES OF MAJOR SPORT FISHES AND CORRELATE THESE PARAMETERS WITH CURRENT LIMNOLOGICAL CONDITIONS IN THE RESERVOIR. WITH THESE DATA WE HOPE TO PREDICT IMPACT OF FUTURE COAL DEVELOPMENT AND POSSIBLE CHANGES IN WATER USE PATTERNS ON SPORT FISH PRODUCTION IN THE RESERVOIR.

PROGRESS: INTENSIVE FISH SAMPLING THIS SPRING HAS RESULTED IN SUFFICIENT RETURNS TO MAKE PRELIMINARY POPULATION ESTIMATES ON WHITE AND BLACK CROPPIE AND NORTHERN PIKE. SMALLER NUMBERS OF WALLEYE, SAUGER AND SMALLMOUTH BASS HAVE BEEN MARKED.

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00000456
PROJECT TITLE:
EAST DECKER SAGE GROUSE STUDY
INVESTIGATORS:
STEVE KNAPP
BIRNEY, MT
RESEARCH INSTITUTION:
MONTANA DEPT. OF FISH AND GAME
HELENA, MT 59601
PRIMARY SPONSOR:
DECKER COAL COMPANY
PRIMARY FUNDING AMOUNT:
5,000
TIME FRAME:
09 01 75 TO 06 01 76
LOCATION:
MT
ABSTRACT:

OBJECTIVES: 1. TO DETERMINE BROOD REARING AND WINTERING AREAS USED BY SAGE GROUSE FROM THE EAST DECKER STRUTTING GROUNDS. 2. TO DETERMINE THE NUMERICAL AND SPATIAL RELATIONSHIP OF THIS SEGMENT OF GROUSE TO OTHER SEGMENTS WHICH TOGETHER MAKE UP A POPULATION UNIT, AND 3. TO PROPOSE A SEASONAL SCHEDULE OF MONITORING TO PERMIT ASSESSMENT OF CHANGE IN LOCATION AND/OR NUMBERS OF GROUSE AS A RESULT OF DISRUPTION OF THE STRUTTING GROUND.

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00000457
PROJECT TITLE:
SARPY BASIN WILDLIFE AND VEGETATION STUDY
INVESTIGATORS:
PETER MARTIN

FORSYTH, MT
RESEARCH INSTITUTION:
MONTANA DEPT. OF FISH AND GAME
HELENA, MT 59601
PRIMARY SPONSOR:
CORMORANT CORP.
PRIMARY FUNDING AMOUNT:
10,000
TIME FRAME:
12 01 73 TO CONTINUING
LOCATION:
MT
ABSTRACT:
OBJECTIVES: 1. TO DETERMINE IMPACT OF FUTURE SURFACE MINING OPERATIONS ON WILDLIFE RESOURCES. 2. TO ENSURE THAT FISH AND WILDLIFE HABITAT VALUES RECEIVE FULL RECOGNITION IN ANY RECLAMATION EFFORTS, AND 3. TO INVESTIGATE POSSIBLE MODIFICATIONS, ADDITIONS, OR INNOVATIONS IN SURFACE MINING RECLAMATION PROCESSES TO AVOID UNNECESSARY LOSS OF WILDLIFE HABITAT AND DEVELOP TECHNIQUES TO ENHANCE HABITAT THROUGH RECLAMATION.

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00000458
PROJECT TITLE:
BULL MOUNTAINS COAL FIELD STUDY
INVESTIGATORS:
GARY DUSEK
ROUNDUP, MT
RESEARCH INSTITUTION:
MONTANA DEPT. OF FISH AND GAME
HELENA, MT 59601
PRIMARY SPONSOR:
MONTANA DEPT. OF FISH AND GAME
SECONDARY SPONSORS:
CONSOLIDATION COAL CO.
PRIMARY FUNDING AMOUNT:
26,360
SECONDARY FUNDING AMOUNTS:
10,500
TIME FRAME:
01 01 72 TO 06 01 76
LOCATION:
MT
ABSTRACT:
OBJECTIVES: 1. TO DETERMINE THE IMPACT OF SURFACE MINING UPON THE WILDLIFE RESOURCES IN THE AREA. 2. TO ENSURE THAT WILDLIFE HABITAT VALUES RECEIVE FULL RECOGNITION IN ANY MINING OR RECLAMATION EFFORT, AND 3. TO INVESTIGATE POSSIBLE MODIFICATIONS OR INNOVATIONS IN THE RECLAMATION PROCESS TO AVOID UNNECESSARY LOSS OF WILDLIFE HABITAT.

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00000459
PROJECT TITLE:
WYODAK TO ANTELOPE 230 KV TRANSMISSION LINE
PROJECT NUMBER:
92
PROJECT SUPERVISOR:
COLLIN G. FALLAT
ECOLOGY CONSULTANTS, INC.
P.O. BOX 2105, 1716 HEATH PARKWAY
FORT COLLINS, CO 80521
PRIMARY SPONSOR:
RURAL ELECTRIFICATION ADMIN.
DONALD L. ZIMMERMAN
WESTERN AREA-ELECTRIC
14TH AND INDEPENDENCE AVE. SW
WASHINGTON, DC 20250
SECONDARY SPONSORS:
TRI-COUNTY ELECTRIC ASSOCIATION, INC.
GEORGE LETELLIER
PRIMARY FUNDING AMOUNT:
PROPRIETARY
SECONDARY FUNDING AMOUNTS:
PROPRIETARY
TIME FRAME:
04 04 75 TO 02 15 76
STATUS:
COMPLETED 02 15 76
LOCATION:
WY - POWDER RIVER COAL BASIN
ABSTRACT:
AN ENVIRONMENTAL ANALYSIS WAS PREPARED FOR TRI-COUNTY ELECTRIC ASSOCIATION, INC. TO ASSIST IN THE ENVIRONMENTAL ASPECTS OF THE DESIGN AND CONSTRUCTION OF A PROPOSED 59-MILE, 230 KV TRANSMISSION LINE. THE LINE WAS ROUTED FROM THE WYODAK COAL FIRED GENERATING PLANT NEAR GILLETTE, WYOMING, SOUTH TO THE CAMPBELL-CONVERSE COUNTY LINE IN THE STATE OF WYOMING. GUIDELINES SET FORTH BY THE RURAL ELECTRIFICATION ADMINISTRATION WERE FOLLOWED IN THE PREPARATION OF THE ENVIRONMENTAL ANALYSIS.
REPORTS AND PUBLICATIONS:
COLLIN G. FALLAT AND RICHARD S. ARO. ´WYODAK TO ANTELOPE 230 KV TRANSMISSION LINE.´ FEBRUARY, 1976. COPIES OF THIS REPORT WERE PROVIDED TO TRI-COUNTY ELECTRIC ASSOCIATION AND THE RURAL ELECTRIFICATION ADMINISTRATION. INFORMATION ON AVAILABILITY CAN BE DETERMINED BY CONTACTING REA IN WASHINGTON, DC.

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00000460

PROJECT TITLE:
SANDY EIS WILDLIFE LISTING AND SELECTED SPECIES NARRATIVES

PROJECT NUMBER:
137

PROJECT SUPERVISOR:
RICHARD J. MCGUIRE
ECOLOGY CONSULTANTS, INC.
P.O. BOX 2105
FORT COLLINS, CO 80522

PRIMARY SPONSOR:
U.S. BUREAU OF LAND MANAGEMENT
LLOYD EISENHAUER
BOX 1869
ROCK SPRINGS, WY 82901

PRIMARY FUNDING AMOUNT:
PROPRIETARY

TIME FRAME:
03 15 76 TO 05 21 76

STATUS:
COMPLETED 05 21 76

LOCATION:
WY - SANDY RIVER BASIN OF SOUTH CENTRAL WYOMING

ABSTRACT:
THE PROJECT INVOLVES DEVELOPING WILDLIFE SPECIES LISTS (BIRDS, MAMMALS, FISH, MOLLUSKS, INVERTEBRATES, REPTILES, AND AMPHIBIOUS) FROM THE LITERATURE AND FROM FIELD SIGHTING RECORDS FOR THE SANDY BUREAU OF LAND MANAGEMENT AREA IN SOUTH CENTRAL WYOMING. NARRATIVES, INCLUDING LIFE HISTORY, STATUS, ECOLOGICAL INTERRELATIONSHIPS, AND FOOD PREFERENCE INFORMATION WERE COMPILED FOR SELECTED WILDLIFE SPECIES (OSPREY, BALD AND GOLDEN EAGLES, CHUKAR, COTTONTAIL, BEAVER, MORNING DOVE AND OTHERS). SEASONAL RANGES AND TERRESTRIAL ECOLOGICAL INTERRELATIONSHIPS WERE SHOWN GRAPHICALLY FOR EACH SPECIES.

REPORTS AND PUBLICATIONS:
1. ECOLOGY CONSULTANTS, INC. WILDLIFE SPECIES LISTING FOR SANDY EIS AREA.
2. ECOLOGY CONSULTANTS, INC. NARRATIVES FOR SELECTED WILDLIFE SPECIES OF THE SANDY EIS AREA.
REPORTS MAY BE REVIEWED IN THE BUREAU OF LAND MANAGEMENT, ROCK SPRINGS OFFICE.

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00000461

PROJECT TITLE:
MISSOURI BASIN POWER PROJECT / ECOLOGICAL BASELINE DEFINITION, IMPACT ASSESSMENT AND PROPOSED MONITORING PROGRAM FOR LARAMIE RIVER STATION AND GRAYROCKS RESERVOIR NEAR WHEATLAND, WYOMING.

PROJECT NUMBER:
61

INVESTIGATORS:
MORTON MAY
UNIV. OF WYOMING, PLANT SCIENCES DIV.
LARAMIE, WY

PROJECT SUPERVISOR:
JAMES B. STATES
ECOLOGY CONSULTANTS, INC.
1716 HEATH PARKWAY
FORT COLLINS, CO 80522
BURNS & MCDONNELL ENGINEERS
P.O. BOX 173
KANSAS CITY, MO 64141

PRIMARY SPONSOR:
BASIN ELECTRIC POWER COOPERATIVE
DUANE BYE
1717 EAST INTERSTATE AVE.
BISMARCK, ND 58501

PRIMARY FUNDING AMOUNT:
PROPRIETARY

TIME FRAME:
06 01 74 TO 06 30 76

STATUS:
COMPLETED 06 30 76

LOCATION:
WY - LARAMIE RIVER, PLATTE AND GOSHEN COUNTIES, WHEATLAND

ABSTRACT:
AN INTENSIVE ONE-YEAR ECOLOGICAL BASELINE STUDY WAS PERFORMED TO IDENTIFY AND QUANTIFY TERRESTRIAL AND AQUATIC ORGANISMS POTENTIALLY AFFECTED BY THE PROPOSED LARAMIE RIVER STATION (1,500 MEGAWATT GENERATING CAPACITY) AND ITS ASSOCIATED GRAYROCKS RESERVOIR. TERRESTRIAL BASELINE INVESTIGATIONS INCLUDED SOILS, VEGETATION, SMALL MAMMALS, BIG GAME, BIRDS, HERPETOFAUNA AND INVERTEBRATES. SPECIAL ATTENTION WAS GIVEN TO QUANTITATIVE DEFINITIONS OF TRACE ELEMENTS, VEGETATION, FOLIAGE INJURY TO PONDEROSA PINE, AND SMALL MAMMAL BLOOD PHYSIOLOGY AT LOCATIONS CORRELATED WITH PREDICTED BEHAVIOR OF SO2 AND PARTICULATES IN STACK GAS PLUMES. THE PURPOSE IS TO PROVIDE A QUANTITATIVE BASELINE FOR THE PROPOSED MONITORING PROGRAM. AQUATIC BASELINE INVESTIGATIONS INCLUDED WATER QUALITY, PHYTOPLANKTON, PINPHYTON, ZOOPLANKTON, BENTHIC MACROINVERTEBRATE, FISHES, AND TRACE ELEMENT CONCENTRATIONS IN LIVING TISSUES AT SELECTED LOCATIONS ALONG BOTH THE LARAMIE AND PLATTE RIVERS.

THE FINAL ECOLOGICAL REPORT DEFINES AND INTERPRETS THE OBJECTIVES, METHODS AND RESULTS OF THESE INVESTIGATIONS; COMBINES THIS INFORMATION WITH TECHNICAL INFORMATION ON

THE PROPOSED FACILITIES TO ASSESS POTENTIAL IMPACTS; AND RECOMMENDS MEASURES FOR MITIGATING AND MONITORING EFFECTS. CURRENT RESPONSIBILITIES ON THE PROJECT INCLUDE SERVING IN ADVISORY AND EXPERT WITNESS CAPACITIES FOR HEARINGS BEFORE PERMIT AGENCIES, SUCH AS THE WYOMING INDUSTRIAL SITING COUNCIL AND FOR RESPONSES TO AGENCY QUESTIONS ON A DRAFT EIS ON THE PROJECT PREPARED BY THE REA.

TYPE OF STUDY:

PART OF 'ENVIRONMENTAL ANALYSIS FOR THE MISSOURI BASIN POWER PROJECT'.

REPORTS AND PUBLICATIONS:

1. ECOLOGY CONSULTANTS, INC. FINAL ECOLOGICAL REPORT FOR THE PROPOSED MISSOURI BASIN POWER PROJECT. JULY, 1975.

2. ECOLOGY CONSULTANTS, INC. REPORT ON THE ENVIRONMENTAL ANALYSIS FOR THE LARAMIE RIVER STATION STEAM ELECTRIC GENERATING FACILITY OF THE MISSOURI BASIN POWER PROJECT. REPORT #74-012-4-001. (CAN BE OBTAINED FROM RICHARD NORTON, BURNS & MCDONNELL ENGINEERS, BOX 173, KANSAS CITY, MO 64141)

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00000462

PROJECT TITLE:

ECOLOGICAL INVESTIGATION AND ASSESSMENT FOR PROPOSED COAL GASIFICATION PROJECT BY WYCOALGAS CO. AND ROCHELLE COAL CO.

PROJECT NUMBER:

18 AND 19

INVESTIGATORS:

RUSSELL T. MOORE

PROJECT SUPERVISOR:

JAMES B. STATES
ECOLOGY CONSULTANTS, INC.
P.O. BOX 2105, 1716 HEATH PARKWAY
FORT COLLINS, CO 80522
SERNCO
ROBERT STILES
DENVER, CO

PRIMARY SPONSOR:

PANHANDLE EASTERN PIPELINE CO.
KEN ANCELL
3000 BISSONNET AVE., P.O. BOX 1642
HOUSTON, TX 77001

SECONDARY SPONSORS:

PEABODY COAL CO.
JACK PECKNER
301 NORTH MEMORIAL DR.
ST. LOUIS, MO 63102

PRIMARY FUNDING AMOUNT:

PROPRIETARY

SECONDARY FUNDING AMOUNTS:

PROPRIETARY

TIME FRAME:

06 01 73 TO CONTINUING

LOCATION:

WY - POWDER RIVER BASIN, CAMPBELL AND CONVERSE COUNTIES

ABSTRACT:

ECOLOGICAL INVENTORIES OF PEABODY COAL COMPANY'S ROCHELLE MINE, TWO ALTERNATIVE COAL GASIFICATION PLANT SITES, AND A PROPOSED RESERVOIR WERE PERFORMED TO PROVIDE INPUT TO THE APPLICANT'S ENVIRONMENTAL ASSESSMENT REPORT IN THE FORM OF A BASELINE DEFINITION, IMPACT ASSESSMENT, MITIGATION PLAN AND RECOMMENDED MONITORING PROGRAM. SUBSEQUENT STUDIES FOCUS UPON SELECTED BIOLOGICAL PARAMETERS IN DEFINING MORE QUANTITATIVELY A PRE AND OPERATIONAL BASE-LINE AGAINST WHICH DATA FROM THE LONG TERM PROGRAM OF MONITORING PLANT OPERATIONS CAN BE COMPARED. CURRENT WORK INVOLVES INVESTIGATIONS FOR WYCOALGAS CO. ONLY.

TYPE OF STUDY:

PART OF 'PROPOSED COAL GASIFICATION PROJECT BY WYOMING COAL GAS CO. AND ROCHELLE COAL CO.'

REPORTS AND PUBLICATIONS:

APPLICANTS' ENVIRONMENTAL ASSESSMENT FOR A PROPOSED GASIFICATION PROJECT IN CAMPBELL AND CONVERSE COUNTIES, WYOMING. PREPARED BY SERNCO.

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00000463

PROJECT TITLE:

PRELIMINARY REPORT ON ENVIRONMENTAL CONSIDERATIONS FOR A GREYROCKS RESERVOIR RECREATION PLAN

PROJECT SUPERVISOR:

JAMES A. SINNING
ECOLOGY CONSULTANTS, INC.
P.O. BOX 2105, 1716 HEATH PARKWAY
FT. COLLINS, CO 80522
FORREST KEPLER
J. T. BANNER & ASSOCIATES, INC.
P.O. BOX 550, 309 SOUTH 4TH ST.
LARAMIE, WY 82070

PRIMARY SPONSOR:

BASIN ELECTRIC POWER COOPERATIVE
DUANE BYE
1717 EAST INTERSTATE AVE.
BISMARCK, ND 58501

PRIMARY FUNDING AMOUNT:

PROPRIETARY

TIME FRAME:

05 09 75 TO 06 30 75

STATUS:

COMPLETED 06 30 75

LOCATION:
WY - LARAMIE RIVER NORTHEAST OF WHEATLAND, WY

ABSTRACT:
ENVIRONMENTAL CONSIDERATIONS RELATING TO A PROPOSED RECREATION PLAN FOR THE PROPOSED GREYROCKS RESERVOIR ARE DISCUSSED. EVALUATION OF FISHING POTENTIAL, BOATING, SWIMMING, PICNIKING, HIKING, CAMPING, HUNTING, AND WILDLIFE OBSERVATION ARE DISCUSSED IN TERMS OF COMPATABILITY AMONG USES AND ADVERSE AND BENEFICIAL EFFECTS OF EACH USE. THIS PROJECT IS RELATED TO ANTICIPATED GROWTH AND IMPACT STEMMING FROM ENERGY DEVELOPMENT IN THE WHEATLAND, WYOMING AREA.

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00000464

PROJECT TITLE:
ROUTING A COAL SLURRY PIPELINE FROM EASTERN WYOMING TO ARKANSAS

PROJECT NUMBER:
44

PROJECT SUPERVISOR:
EDWARD B. REED
ECOLOGY CONSULTANTS, INC.
P.O. BOX 2105, 1716 HEATH PARKWAY
FT. COLLINS, CO 80522

PRIMARY SPONSOR:
BECHTEL CORPORATION
CHARLES REXFORD
SAN FRANCISCO, CA

SECONDARY SPONSORS:
ENERGY TRANSPORTATION SYSTEMS, INC.

PRIMARY FUNDING AMOUNT:
PROPRIETARY

SECONDARY FUNDING AMOUNTS:
PROPRIETARY

TIME FRAME:
05 01 74 TO 04 31 74

STATUS:
COMPLETED 07 31 74

LOCATION:
WY NE KS OK AK

ABSTRACT:
ECOLOGY CONSULTANTS, INC. CONTRIBUTED TO THE ETSI COAL SLURRY PIPELINE ENVIRONMENTAL REPORT DEVELOPED BY BECHTEL CORPORATION. ECI'S CONTRIBUTIONS WERE 1. DEVELOP ECOLOGICAL CRITERIA FOR ROUTING A COAL SLURRY PIPELINE ACROSS EASTERN WYOMING, 2. ANTICIPATE ECOLOGICAL PROBLEMS LIKELY TO BE ENCOUNTERED IN GOING FROM LUSK, WY TO WHITE BLUFF, AK; 3. PROVIDE DESCRIPTIONS OF ENVIRONMENTS WHICH WOULD BE TRAVERSED IN WYOMING, NEBRASKA AND KANSAS; AND 4. SUGGEST MEASURES TO LESSEN IMPACTS OF PIPELINE AND PUMPING STATION FACILITIES.
DATA BASE WAS DERIVED FROM DIRECT AERIAL RECONNAISSANCES, TOPOGRAPHIC MAPS, SOME GROUND EXAMINATION AND INTERVIEWS WITH STATE AGENCIES.

REPORTS AND PUBLICATIONS:
ETSI COAL SLURRY PIPELINE, ENVIRONMENTAL IMPACT REPORT. BECHTEL CORPORTION, SAN FRANCISCO, CA

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00000465

PROJECT TITLE:
BACKGROUND AIR QUALITY STUDY

INVESTIGATORS:
D. HOLTZ

RESEARCH INSTITUTION:
MONTANA DEPT. OF HEALTH & ENVIRONMENTAL SCIENCES
HELENA, MT 59601

PRIMARY SPONSOR:
MONTANA DEPT. OF NATURAL RESOURCES & CONSERVATION

PRIMARY FUNDING AMOUNT:
151,780

TIME FRAME:
08 01 73 TO 02 28 75

STATUS:
COMPLETED 02 28 75

LOCATION:
MT

ABSTRACT:
RESEARCH OBJECTIVE: TO DETERMINE THE PRESENT BACKGROUND AIR QUALITY TO APPLY DIFFUSION MODELING ESTIMATES AND TO COMPARE WITH AIR QUALITY DATA AFTER PLANT FACILITIES HAVE BEEN OPERATING.

REPORTS AND PUBLICATIONS:
JAMES W. GELHAUS. AN AIR QUALITY ASSESSMENT OF COLSTRIP, MONTANA, PRIOR TO THE DEVELOPMENT OF COAL-FIRED POWER PLANTS. MONTANA DEPT. OF HEALTH & ENVIRONMENTAL SCIENCES, AIR QUALITY BUREAU, JAN. 1976.

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00000466

PROJECT TITLE:
MHD ENVIRONMENTAL IMPACT STUDY - TASK H-5

INVESTIGATORS:
DON BRELSFORD

RESEARCH INSTITUTION:
MONTANA ENERGY & MHD RESEARCH & DEVELOPMENT INST.
BUTTE, MT 59711

PRIMARY SPONSOR:
U.S. ERDA, OFFICE OF FOSSIL FUELS

PRIMARY FUNDING AMOUNT:
PROPRIETARY
TIME FRAME:
03 18 75 TO 07 30 76
LOCATION:
MT WY
ABSTRACT:

THE POWER PLANT SITING STUDY OF THIS TASK HAS COMPLETED THE FIRST PHASE. INVESTIGATION OF THE POTENTIAL ENVIRONMENTAL IMPACT ASPECT OF THE MHD POWER GENERATION PROCESS CONTINUES. INVESTIGATION OF SOURCES FOR RELATED AND APPLICABLE COMPUTER PROGRAMS FOR ENVIRONMENTAL IMPACT MODELING OF MHD POWER GENERATION IS CONTINUING. CHEMICAL AND PHYSICAL PROPERTY DATA OF WESTERN COALS HAS BEEN GATHERED FOR REVIEW. TECHNICAL LITERATURE ANALYSIS OF RECOVERING SPENT SEED AND SULFUR FROM THE EXHAUST GASES OF A MHD POWER PLANT IS UNDERWAY. A LITERATURE REVIEW OF METHODS FOR DEVELOPING MULTIPLIERS NECESSARY TO ESTIMATE THE INDIRECT AND SECONDARY ECONOMIC EFFECTS OF AN MHD STEAM POWER GENERATING FACILITY WAS DONE. AN AERIAL INSPECTION AND PHOTOGRAPHIC SURVEY WAS CARRIED OUT ON THE MAJOR COAL FIRED, ELECTRIC GENERATING PLANTS, OPERATING AND UNDER CONSTRUCTION IN WYOMING AND MONTANA. THE PARTICULAR CHARACTERISTICS OF THE INDIVIDUAL POWER PLANT SITE PLAN AND ITS RELATIONSHIP TO THE COAL SOURCE AND COOLING WATER SUPPLY WAS ALSO STUDIED.

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00000467
PROJECT TITLE:
A SURVEY OF TRACE ELEMENTS IN NORTH DAKOTA LIGNITE AND EFFLUENT STREAMS FROM COMBUSTION AND GASIFICATION FACILITIES
PROJECT SUPERVISOR:
DORAB N. BARIA
UNIV. OF NORTH DAKOTA, ENG. EXP. STATION
GRAND FORKS, ND 58201
PRIMARY SPONSOR:
NORTH DAKOTA STATE WATER COMMISSION
BISMARCK, ND
SECONDARY SPONSORS:
UNIV. OF NORTH DAKOTA
TIME FRAME:
05 01 74 TO 07 31 75
LOCATION:
ND
ABSTRACT:

BECAUSE OF ITS EXTENSIVE LIGNITE DEPOSITS AND ADEQUATE WATER SUPPLY, ENERGY COMPANIES ARE ATTRACTED TO THE WESTERN PART OF NORTH DAKOTA TO BUILD MINE-MOUTH ELECTRIC GENERATION AND COAL GASIFICATION PLANTS. THERE IS A POTENTIAL FOR LARGE AMOUNTS OF LIGNITE TO BE EITHER BURNT OR GASIFIED IN THE WESTERN PART OF THE STATE. A CONCERN IS THE POSSIBLE EMISSION INTO THE ENVIRONMENT OF TOXIC TRACE ELEMENTS ORIGINALLY IN THE LIGNITE. THE TRACE ELEMENTS KNOWN TO BE TOXIC IN SMALL AMOUNTS ARE ARSENIC, BERYLLIUM, CADMIUM, FLUORINE, LEAD, MERCURY AND SELENIUM. A SURVEY IS MADE OF THE TRACE ELEMENT CONCENTRATIONS IN LIGNITES FROM VARIOUS NORTH DAKOTA SOURCES. THE FEDERAL AND NORTH DAKOTA LAWS SPECIFYING TOXIC LEVELS AND THE AIR AND WATER QUALITY STANDARDS RELATING TO TRACE ELEMENTS ARE REVIEWED. A SURVEY WAS MADE OF THE WORK DONE ON THE DISTRIBUTION OF TRACE ELEMENTS IN THE EFFLUENT STREAMS OF COAL-FIRED POWER PLANTS AND COAL GASIFICATION PLANTS. A CONCLUSION IS THAT FOR THE AVERAGE AMOUNT OF MERCURY PRESENT IN THE LIGNITE, MERCURY EMISSION IN AIR WILL BE WELL BELOW THE PRESENT FEDERAL STANDARDS. TRACE ELEMENT EMISSIONS IN THE WATER MAY EXCEED PRESENT FEDERAL AND STATE STANDARDS, BUT FURTHER STUDY IS WARRANTED. IT IS RECOMMENDED THAT BASELINE DATA BE OBTAINED AND MEASUREMENT TECHNIQUES BE IMPROVED. THERE ARE NOT STUDIES AVAILABLE FOR EFFLUENTS FROM THE LURGI GASIFICATION PROCESS, AND IT IS RECOMMENDED THAT ADDITIONAL DATA BE OBTAINED FOR THAT AND OTHER PROCESSES. ALSO, THE FEDERAL AND STATE AIR AND WATER POLLUTION LAWS SHOULD BE REVISED WHEN DATA FOR STANDARDS ARE AVAILABLE TO INCLUDE TRACE ELEMENT POLLUTION LEVELS. THERE ARE NO LAWS AT PRESENT FOR SOLID WASTE DISPOSAL.
TYPE OF STUDY:
PART OF " WEST RIVER STUDY," NORTH DAKOTA STATE WATER COMMISSION
REPORTS AND PUBLICATIONS:
FINAL REPORT AND APPENDICES. WEST RIVER STUDY: ANALYSIS OF ALTERNATIVES FOR DEVELOPING AND MANAGING WEST RIVER AREAS, WATER AND RELATED LAND RESOURCES. NORTH DAKOTA STATE WATER COMMISSION, 1975.

* * * * *

00000468
PROJECT TITLE:
WYOMING COST OF LIVING INDEXES
PROJECT SUPERVISOR:
RICHARD T. O'GARA
WYOMING DEPT. OF LABOR & STATISTICS
4TH FLOOR, BARRETT BUILDING
CHEYENNE, WY 82001
PRIMARY FUNDING AMOUNT:
6,500
STATUS:
RUN QUARTERLY
LOCATION:
ROCK SPRINGS, RIVERTON, JACKSON, SHERIDAN, GILLETTE, CASPER, WY AND DENVER, CO
ABSTRACT:

THESE INDEXES MEASURE DIFFERENCES IN COST OF LIVING BETWEEN CITIES. THEY DO NOT MEASURE THE RATE OF INCREASE OR DECREASE IN PRICES OVER TIME. THUS ARE NOT THE SAME AS THE U.S. CONSUMER PRICE INDEX. EIGHTY-NINE ITEMS, PARTITIONED INTO FIVE CATEGORIES--FOOD, HOUSING, APPAREL AND UPKEEP, TRANSPORTATION, AND HEALTH AND RECREATION ARE REPETITIOUSLY SAMPLED IN EACH LOCALITY. UTILIZING AVERAGE PRICES FROM EACH CITY, THE WCLI INDEX NUMBERS ARE CALCULATED ALLOWING MUNICIPALITIES TO BE RANKED BY COST OF LIVING IN EACH CATEGORY. THESE INDEX NUMBERS ALSO REFLECT THE IMPACT OF ENERGY DEVELOPMENT ON COST OF LIVING IN THE ABOVE AREAS.

REPORTS AND PUBLICATIONS:

WYOMING ECONOMIC INDICATIONS, MONTHLY. PUBLISHED BY THE WYO. DEPARTMENT OF LABOR AND STATISTICS. EDITOR: RICHARD T. O'GARA.

OBTAINED FROM: WYO. DEPT. OF LABOR & STATISTICS, 4TH FLOOR, BARRETT BUILDING, CHEYENNE, WY 82002

* * * * *

00000469
PROJECT TITLE:
MANPOWER SURVEY OF WYOMING SUBBITUMINOUS COAL MINING.
PROJECT SUPERVISOR:
RICHARD T. O'GARA
WYOMING DEPT. OF LABOR & STATISTICS
4TH FLOOR, BARRETT BUILDING
CHEYENNE, WY 82002
TIME FRAME:
10 01 75 TO 02 01 76
STATUS:
COMPLETED 02 01 76
LOCATION:
WY - STATEWIDE
ABSTRACT:

PROBLEM: STATE LACKS OCCUPATIONAL ESTIMATES AND PREVAILING WAGES BY OCCUPATION FOR ALL ECONOMIC SECTORS.

OBJECTIVE: TO PROVIDE SOME OCCUPATIONAL DATA AND WAGE RATES FOR SELECTED INDUSTRIES; I.E. MINING OF SUBBITUMINOUS COAL.

APPROACH: A 100 PERCENT SAMPLE SURVEY WAS RUN WITH A 97.0 PERCENT RESPONSE.

REPORTS AND PUBLICATIONS:

RICHARD T. O'GARA AND A. J. WOLFF. 'MANPOWER SURVEY OF SUBBITUMINOUS COAL MINING IN WYOMING'. OCTOBER 1975.

AVAILABLE FROM: WYO. DEPT. OF LABOR & STATISTICS, 4TH FLOOR, BARRETT BLDG., CHEYENNE, WY 82002.

* * * * *

00000470
PROJECT TITLE:
LONGITUDINAL SOCIOECONOMIC MONITORING SYSTEM
PROJECT NUMBER:
10670156
INVESTIGATORS:
AUDIE L. BLEVINS, JR.
UNIV. OF WYOMING, DEPT. OF SOCIOLOGY
LARAMIE, WY 82071
PROJECT SUPERVISOR:
GARY WATTS
UNIV. OF WYOMING, DIVISION OF BUS. & ECON. RESEARCH
LARAMIE, WY 82071
PRIMARY SPONSOR:
OLD WEST REGIONAL COMMISSION
JEANNETTE STUDER
306A PRATT BLDG.
BILLINGS, MT 59101
PRIMARY FUNDING AMOUNT:
173,536
TIME FRAME:
11 01 76 TO 10 31 77
LOCATION:
PLATTE CO., WY; MCLEAN CO., ND; FERGUS CO., MT
ABSTRACT:

ALTHOUGH MANY PROJECTIONS HAVE BEEN MADE ABOUT THE SOCIOECONOMIC IMPACT OF ENERGY DEVELOPMENT, VERY LITTLE FACTUAL DATA HAS BEEN GATHERED ON ACTUAL IMPACTS THAT HAVE OCCURRED IN THE REGION. IT IS PROPOSED THAT A NUMBER OF SOCIAL AND ECONOMIC FACTORS NEED TO BE MEASURED OVER TIME TO DEVELOP A CLEARER UNDERSTANDING OF RELATIONSHIPS BETWEEN EMPLOYMENT AND POPULATION INCREASES AND SOCIOECONOMIC CHANGES.

THE OBJECTIVES OF THIS PROJECT ARE AS FOLLOWS: 1. TO MONITOR SELECTED SOCIAL AND ECONOMIC VARIABLES OVER TIME.
2. TO COMPARE ACTUAL MEASURED CHANGES WITH PROJECTED CHANGES IN AN ATTEMPT TO ISOLATE REASONS FOR DISCREPANCIES.
3. TO ANALYZE MEASURED CHANGES TO DETERMINE WHICH ARE RELATED TO ENERGY DEVELOPMENT, WHICH CAN BE GENERALIZED TO ANY RAPIDLY GROWING COMMUNITY AND WHICH ARE SITE-SPECIFIC.
4. TO MAKE THE RESULTS OF THE MONITORING AND ANALYSIS AVAILABLE TO PLANNERS, ADMINISTRATORS AND LEGISLATORS THROUGHOUT THE REGION IN THE FORM OF BOTH WRITTEN REPORTS AND A COMPUTERIZED MODEL FOR MAKING IMPACT PROJECTIONS. TWO IMPACT AREAS AND TWO CONTROL AREAS WILL BE MONITORED.

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00000471
PROJECT TITLE:
FISCAL IMPACT OF COAL DEVELOPMENT ON LOCAL GOVERNMENT
PROJECT SUPERVISOR:
MAXINE JOHNSON
UNIV. OF MONTANA, BUREAU OF BUSINESS & ECONOMIC RESEARCH
MISSOULA, MT 59801
PRIMARY SPONSOR:
MONTANA ENERGY ADVISORY COUNCIL
TED CLACK
STATE CAPITOL
HELENA, MT 59601
PRIMARY FUNDING AMOUNT:
20,559
TIME FRAME:
03 06 75 TO 06 30 76
LOCATION:
MT
ABSTRACT:
CASE STUDY OF COAL DEVELOPMENT FISCAL IMPACT ON STATE AND LOCAL GOVERNMENT AND DEVELOPMENT OF METHODOLOGY FOR FUTURE IMPACT STUDIES.

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00000472
PROJECT TITLE:
WYOMING'S CONSTRUCTION INDUSTRY - A MANPOWER SURVEY
PROJECT SUPERVISOR:
RICHARD T. O'GARA
WYOMING DEPT. OF LABOR & STATISTICS
4TH FLOOR, BARRETT BUILDING
CHEYENNE, WY 82001
TIME FRAME:
11 01 74 TO 04 01 75
STATUS:
COMPLETED 04 01 75
LOCATION:
WY
ABSTRACT:
PROBLEM: STATE LACKS OCCUPATIONAL ESTIMATES OF WORKERS AND PREVAILING WAGES BY OCCUPATION FOR ALL ECONOMIC SECTORS, INCLUDING CONSTRUCTION OCCUPATIONS RELATED TO ENERGY DEVELOPMENT.
OBJECTIVE: TO PROVIDE SOME OCCUPATIONAL DATA OF THE NUMBER OF WORKERS IN THE CONSTRUCTION INDUSTRY.
APPROACH: DESIGN OF A STRATIFIED RANDOM SAMPLE SURVEY EMPLOYING SIC CLASSIFICATIONS. ESTIMATION TECHNIQUE OF ESTIMATING PROPORTIONS WITHIN CLUSTERS WAS USED. EMPLOYERS WERE ASKED TO FURNISH STATISTICS ON EMPLOYMENT UP TO AUGUST, 1974.
REPORTS AND PUBLICATIONS:
RICHARD T. O'GARA AND A. J. WOLFF. 'WYOMING'S CONSTRUCTION INDUSTRY - A MANPOWER SURVEY'. OCTOBER, 1975. OBTAINED FROM: WYO. DEPT. OF LABOR & STATISTICS, 4TH FLOOR, BARRETT BLDG., CHEYENNE, WY 82002

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00000473
PROJECT TITLE:
MACRO ECONOMIC IMPACT OF COAL AND OIL SHALE DEVELOPMENT IN THE INTERMOUNTAIN WEST
PROJECT NUMBER:
CONTRACT CO-04-50328-00 (FEA)
INVESTIGATORS:
C. LEWIS
RESEARCH INSTITUTION:
UTAH STATE UNIV., OFFICE OF RESOURCE DEVELOPMENT
AGRICULTURAL SCIENCE BLDG., ROOM 223A
LOGAN, UT 84321
PRIMARY SPONSOR:
U.S. FEDERAL ENERGY ADMINISTRATION
TIME FRAME:
04 01 76 TO 03 31 77
LOCATION:
CO WY MT UT NM
ABSTRACT:
THE CONTRACTOR WILL PRODUCE A MULTI-STATE INTERREGIONAL INPUT-OUTPUT MODEL WHICH WILL EVALUATE THE EXTENT AND MAGNITUDE OF ECONOMIC GROWTH BY SECTOR RESULTING FROM ALTERNATIVE LEVELS OF COAL, OIL SHALE REFINING, COAL GASIFICATION, ELECTRIC POWER GENERATION, AND ENERGY PRODUCTION TRANSMISSION PIPELINES IN THE 5 STATE AREA OF COLORADO, WYOMING, MONTANA, UTAH, AND NEW MEXICO.

PROJECTIONS THROUGH 1985 ARE TO BE MADE IN ORDER TO EVALUATE THE IMPACTS ON FUTURE EMPLOYMENT, SECTOR OUTPUT, AND INDUSTRY GROWTH DERIVED FROM VARIOUS RATES OF COAL AND OIL SHALE DEVELOPMENT.
IMPACTS ON THE PUBLIC SECTOR WILL ALSO BE TRACED.
SIDE EFFECTS FROM DEVELOPMENT WILL ALSO BE EVALUATED, E. G., ENVIRONMENTAL CHANGE, AND CHANGE IN SOCIAL WELL-BEING.

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00000474
PROJECT TITLE:
ECONOMIC ANALYSIS OF THE IMPACTS OF COAL DEVELOPMENT IN MONTANA
PROJECT NUMBER:
0067229
INVESTIGATORS:
R. L. STROUP
RESEARCH INSTITUTION:
MONTANA STATE UNIV., AG. EXP. STATION
BOZEMAN, MT 59715
PRIMARY SPONSOR:
MONTANA STATE UNIV., AG. EXP. STATION
TIME FRAME:
07 01 75 TO 06 30 76
LOCATION:
MT
ABSTRACT:

OBJECTIVE: COORDINATE PRESENT AND EXPECTED COAL DEVELOPMENT RESEARCH WITHIN THE DEPARTMENT OF AGRICULTURAL ECONOMICS AND ECONOMICS AND BETWEEN THE DEPARTMENT RESEARCHER EFFORT AND OTHER RESEARCHERS, FUNDING AGENCIES, AND POTENTIAL USERS OF THE DATA OUTPUTS. CONDUCT ECONOMIC ANALYSIS ON ONE OR MORE PROBLEMS POSED BY COAL DEVELOPMENT TO MONTANA AGRICULTURE AND RURAL DEVELOPMENT, WITH INITIAL PRIORITY ON THE QUESTION OF STRIP MINE RECLAMATION.
APPROACH: COORDINATION IMPLIES KEEPING ABREAST OF COAL RESEARCH DEVELOPMENTS INCLUDING THE ACTIVITIES OF OTHER RESEARCHERS, FUNDING AGENCIES, AND DATA USERS. ECONOMIC ANALYSIS OF RECLAMATION ALTERNATIVES WILL BE APPROACHED ON THE COST SIDE OF COST SYNTHESIS, IN A FASHION SIMILAR TO FARM BUDGETING STUDIES; METHODOLOGY FOR APPROACHING OTHER UNRESEARCHED AND IMPORTANT QUESTIONS REMAINS TO BE DETERMINED.

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00000475
PROJECT TITLE:
THE SOCIOECONOMIC IMPACT OF ENERGY DEVELOPMENT OF THE CROW AND NORTHERN CHEYENNE INDIAN TRIBES
PROJECT NUMBER:
10670221
INVESTIGATORS:
JEAN NORDSTRUM (NCRP)
MARTIN BAKER (CROW OFFICE OF COAL RESEARCH, CROW AGENCY)
PROJECT SUPERVISOR:
RICHARD MONTEAU
NORTHERN CHEYENNE RESEARCH PROJECT
LAME DEER, MT 59043
PRIMARY SPONSOR:
OLD WEST REGIONAL COMMISSION
JEANNETTE STUDER
RM. 306A PRATT BLDG.
BILLINGS, MT 59101
PRIMARY FUNDING AMOUNT:
257,900
TIME FRAME:
05 01 76 TO 04 30 77
LOCATION:
MT
ABSTRACT:

THE CROW AND NORTHERN CHEYENNE RESERVATIONS, LOCATED IN SOUTHEASTERN MONTANA, CONTAIN AN ESTIMATED TEN BILLION TONS OF COAL. IN ORDER TO MAKE WISE DECISIONS, MORE INFORMATION IS NEEDED ON THE CURRENT CONDITIONS EXISTING ON BOTH RESERVATIONS. THIS INFORMATION CAN THEN PROVIDE A BASIS FOR MAKING AN ESTIMATION OF THE CHANGES WHICH COAL DEVELOPMENT MIGHT BRING AND THE MANNER IN WHICH THE INDIAN PEOPLE CAN TAKE ADVANTAGE OF DEVELOPMENT BENEFITS IF THEY CHOOSE TO HAVE THE COAL DEVELOPED.
OBJECTIVES. THE OBJECTIVES OF THIS PROJECT ARE AS FOLLOWS: 1. TO EVALUATE THE CURRENT SOCIOECONOMIC AND CULTURAL CONDITIONS PREVAILING ON THE RESERVATIONS FOR BASELINE PURPOSES.
2. TO DETERMINE THE PREVAILING ATTITUDES AND FEELINGS OF RESERVATION INHABITANTS TOWARD RESERVATION ENERGY DEVELOPMENT.
3. TO ESTABLISH SOCIOECONOMIC PROJECTIONS FOR THE CROW AND NORTHERN CHEYENNE RESERVATIONS, GIVEN DIFFERENT ASSUMPTIONS OF ECONOMIC DEVELOPMENT.
4. TO ESTABLISH RELIABLE IMPACT RESEARCH METHODS TO PROVIDE THE TRIBES IN THE WEST WITH MECHANISMS THAT WILL ALLOW THEM TO PERIODICALLY MONITOR SOCIAL CHANGE ON THE RESERVATION BROUGHT ABOUT BY GROWTH AND DEVELOPMENT ON AND NEAR THE RESERVATION.
5. TO TRAIN TRIBAL PERSONS IN ALL PHASES OF THE RESEARCH TO PROVIDE AN INDIGENOUS GROUP OF TRIBAL MEMBERS THAT CAN PERIODICALLY UPDATE THE INFORMATION PROPOSED FOR COLLECTION.

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00000476
PROJECT TITLE:
A HANDBOOK FOR SOCIOECONOMIC ASSESSMENTS OF ENERGY DEVELOPMENT FOR LOCAL, STATE, AND REGIONAL OFFICIALS
PROJECT SUPERVISOR:
MICHAEL FRANKEL; ISABEL REIFF
CENTAUR MANAGEMENT CONSULTANTS, INC.
1120 CONNECTICUT AVE. NW
WASHINGTON, DC 20036
PRIMARY SPONSOR:
U.S. ERDA
ELLISON BURTON
WASHINGTON DC 20545
TIME FRAME:
03 22 76 TO 07 23 76
LOCATION:
NATIONAL
ABSTRACT:

THE PURPOSE OF THIS HANDBOOK IS TO PROVIDE LOCAL, STATE AND REGIONAL OFFICIALS A MEANS TO CATEGORIZE AND EVALUATE SOCIOECONOMIC IMPACTS OF ENERGY DEVELOPMENT SCENARIOS. THE METHODOLOGY FOR SOCIOECONOMIC IMPACT ASSESSMENT BEGINS WITH ECONOMIC BASELINE DATA AND ENERGY DEVELOPMENT PROJECTIONS. FROM THESE ECONOMIC AND JOB PROJECTIONS COME POPULATION EARNINGS, PERSONAL INCOME, AND RETAIL SALES PROJECTIONS. AFTER POPULATION PROJECTIONS ARE MADE, DEMANDS FOR HOUSING EDUCATION, HEALTH, FACILITIES, TRANSPORTATION, SEWER AND WATER CAN BE PROJECTED AND EXPECTED DEMANDS FOR PUBLIC SERVICES (POLICE, FIRE, CAPITAL BUDGET PROGRAMS) AS WELL AS PUBLIC REVENUES CAN BE DERIVED. OTHER IMPACTS SUCH AS VISUAL QUALITY, HISTORIC RESOURCES, CULTURAL RESOURCES AND THE WHOLE RANGE OF IMPACTS ON THE PHYSICAL ENVIRONMENT ARE DISCUSSED BUT NOT DEVELOPED TO THE EXTENT OF THE MAJOR SOCIOECONOMIC IMPACTS.

THE HANDBOOK PROVIDES PLANNING OFFICIALS AND DECISION MAKERS WITH ALTERNATIVE METHODOLOGIES FOR ESTABLISHING BASELINE CONDITIONS AS WELL AS METHODOLOGIES FOR FORMULATING PROJECTIONS OF ALTERNATIVE ENERGY DEVELOPMENT IMPACTS. THE PROJECTED IMPACTS ARE BASED ON THE ALTERNATIVE ENERGY DEVELOPMENT SCENARIOS INVOLVING THE COAL AND SYNTHETIC FUEL INDUSTRIES. THESE INDUSTRIES INCLUDE COAL EXTRACTION, COAL PROCESSING, COAL COMBUSTION, COAL CONVERSION AND OIL SHALE CONVERSION.

TO ASSIST LOCAL AREAS IMPACTED BY ENERGY DEVELOPMENT, THE HANDBOOK DISCUSSES FEDERAL ASSISTANCE PROGRAMS COVERING LOCAL AND STATE PLANNING, IMPLEMENTATION AND CONSTRUCTION PROGRAMS.
QUALITY IN RURAL AREAS

00000477
PROJECT TITLE:
ECONOMICS OF COAL AND OILSHALE DEVELOPMENT ON ENVIRONMENTAL QUALITY IN RURAL AREAS
INVESTIGATORS:
COLO. STATE UNIV. - JOHN GREEN, VIRGIL WHETZEL, MEL SKOLD, LINLEY JUERS, KEN LEATHERS, JOE DIEMER
UNIV. OF MINN. - TOM STINSON
NORTH DAKOTA STATE UNIV. - STANLEY VOELKER, W. MCMARTIN
U.S. DEPT. OF AG., ERS - JEFF CONAPOST
PROJECT SUPERVISOR:
LLOYD BENDER (MONTANA STATE UNIV., ERS) ;JOE BARSE (ERS, NATURAL RESOURCE ECONOMICS DIV., WASH, DC)
RESEARCH INSTITUTION:
U.S. DEPT. OF AG., ECONOMIC RESEARCH SERVICE
WASHINGTON, DC
PRIMARY SPONSOR:
U.S. EPA
SECONDARY SPONSORS:
U.S. DEPT. OF AG., ECONOMIC RESEARCH SERVICE
PRIMARY FUNDING AMOUNT:
460,000
SECONDARY FUNDING AMOUNTS:
100,000
TIME FRAME:
06 30 74 TO 09 30 78
LOCATION:
MT WY ND SD IL
ABSTRACT:

OBJECTIVES: ASSESS THE ECONOMIC IMPLICATIONS OF ALTERNATIVE COAL AND OIL SHALE DEVELOPMENT AND ASSOCIATED ACTIVITIES ON ENVIRONMENTAL QUALITY AND THE COMPETITION FOR RESOURCES IN RURAL AREAS.

APPROACH: DEVELOP REGIONAL REPORTS ON CURRENT LAND AND WATER USE, THE ECONOMIC IMPLICATIONS FOR FUTURE RESOURCE USE, RESOURCE COMPETITION, AND ENVIRONMENTAL QUALITY RESULTING FROM ALTERNATIVE LEVELS OF COAL AND OIL SHALE DEVELOPMENT, AND RELATED ACTIVITIES. DEVELOP AN INTERREGIONAL LINEAR PROGRAM TO EVALUATE CONFLICTING RECLAMATION BUDGETS FROM AVAILABLE LITERATURE, COOPERATION WITH OTHER AGENCIES WITHIN AND WITHOUT USDA, AND LIMITED EMPIRICAL STUDIES. BUDGETING TECHNIQUES AND LINEAR PROGRAMMING WILL BE USED TO ESTIMATE WATER DEMAND AND TO APPRAISE THE ECONOMIC AND ENVIRONMENTAL IMPLICATIONS OF ALTERNATIVE WATER SUPPLIES.

PROGRESS REPORT: 74/07 TO 75/06

MAJOR RESERVES FOR ECONOMICAL STRIPPING ARE LOCATED IN THE NORTHERN HALF OF THE APPALACHIAN BASIN, THE ILLINOIS BASIN AND THE NORTHERN GREAT PLAIN REGIONS. MAJOR CONCERN IS WITH THE SOCIOECONOMIC PROBLEMS ASSOCIATED WITH COAL DEVELOPMENT PROBLEMS WHICH WILL RESULT PRIMARILY FROM THE THRUSTING OF LARGE NUMBERS OF PEOPLE QUICKLY INTO SPARSELY POPULATED RURAL AREAS AND IMPACT ON EMPLOYMENT AND WAGE RATES, SOCIAL

COSTS AND BENEFITS, EFFECTS ON OTHER SECTORS OF THE ECONOMY AND ON GOVERNMENT AND QUESTIONS OF EQUITY. THE LOCATION AND LEVEL OF DEVELOPMENT ACTIVITIES WILL DEPEND UPON: ENERGY PRICES; COAL QUALITY,DEPTH OF SEAM;WATER AVAILABILITY OF THE COST OF EXTRACTION, TRANSPORTATION, AND PROCESSING, AIR POLLUTION LAWS; RECLAMATION LAWS; SEVERANCE TAXES AND OTHER FACTORS. THE NATIONAL GOAL OF INCREASED ENERGY SELF-SUFFICIENCY HAS PLACED MAJOR IMPORTANCE ON INCREASED COAL PRODUCTION AND POTENTIAL OIL SHALE DEVELOPMENT. THE ECONOMICALLY ATTRACTIVE SURFACE MINED COAL IS EXPECTED TO PROVIDE MUCH OF THE INCREASED OUTPUT IN THE NEAR FUTURE. THE ENVIRONMENTAL IMPACTS OF SURFACE MINING, ENERGY CONVERSION, AND URBANIZATION ARE A MAJOR CONCERN IN COAL AND OIL SHALE PRODUCING AREAS.

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0000478
ROJECT TITLE:
DEVELOPMENT PRIORITIES OF THE WEST RIVER REGION, NORTH DAKOTA - A SOCIAL ATTITUDES AND COMMUNICATION ANALYSIS
ROJECT SUPERVISOR:
JOHN BOWES
UNIV. OF NORTH DAKOTA, COMMUNICATIONS RESEARCH CENTER
GRAND FORKS, ND 58201
RIMARY SPONSOR:
NORTH DAKOTA STATE WATER COMMISSION
BISMARCK, ND
ECONDARY SPONSORS:
UNIV. OF NORTH DAKOTA, WATER RESOURCES RESEARCH INST.
IME FRAME:
01 01 73 TO 10 31 74
TATUS:
COMPLETED 10 31 74
OCATION:
ND - WEST RIVER AREA
STRACT:

A SOCIAL ATTITUDE AND COMMUNICATION ANALYSIS WAS CONDUCTED AS PART OF THE STUDY BASED ON THE KNIFE RIVER BASIN AS A REPRESENTATIVE AREA. THE STUDY WAS ORGANIZED INTO THE FOLLOWING SECTIONS:
1. PUBLIC AWARENESS AND EVALUATION OF THE WEST RIVER STUDY 2. DEVELOPMENT PRIORITIES OF THE PUBLIC; 3. PUBLIC AWARENESS AND EVALUATION OF GOVERNMENTAL AGENCIES; 4. EFFECTIVENESS OF COMMUNICATION BETWEEN CITIZENS AND AGENCIES; 5. WHERE TO OBTAIN INFORMATION ON WATER DEVELOPMENTS; 6. WILLINGNESS OF PEOPLE TO CHANGE LIFESTYLES; AND, 7. CHARACTERISTICS OF THE PEOPLE INTERVIEWED.

YPE OF STUDY:
PART OF "WEST RIVER STUDY." NORTH DAKOTA STATE WATER COMMISSION
EPORTS AND PUBLICATIONS:
FINAL REPORT AND APPENDICES. WEST RIVER STUDY: ANALYSIS OF ALTERNATIVES FOR DEVELOPING AND MANAGING WEST RIVER AREAS, WATER AND RELATED LAND RESOURCES. NORTH DAKOTA STATE WATER COMMISSION, 1975.

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00000479
PROJECT TITLE:
EPA ACTION HANDBOOK
PROJECT SUPERVISOR:
WILLIAM LAMONT
BRISCOE, MAPHIS, MURRAY, LAMONT, INC.
2334 PEARL
BOULDER, CO 80302
PRIMARY SPONSOR:
U.S. EPA
GEORGE COLLINS
DENVER, CO
PRIMARY FUNDING AMOUNT:
51,043
TIME FRAME:
02 01 76 TO 03 01 77
LOCATION:
GENERAL APPLICATION
ABSTRACT:

THE GENERAL OBJECTIVE IS TO DEVELOP AN ACTION DOCUMENT FOR RURAL COMMUNITIES AND COUNTIES WHICH ADDRESS PROBLEMS ASSOCIATED WITH THE ECONOMIC, ENVIRONMENTAL, PHYSICAL, AND FINANCIAL PROBLEMS THAT WOULD RESULT FROM DEVELOPMENT OF ENERGY AND MINERAL RESOURCES IN THE ROCKY MOUNTAIN REGION. THERE WILL BE TWO CASE STUDIES - A COMMUNITY EXPERIENCING A SINGE IMPACT AND A COMMUNITY EXPERIENCING A MULTIPLE IMPACT.

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00000480
PROJECT TITLE:
HEAT TRANSFER FROM HORIZONTAL FINNED TUBE BUNDLES IN A FLUIDIZED BED
PROJECT SUPERVISOR:
WILLIAM F. GENETTI
MONTANA STATE UNIV., DEPT. OF CHEMICAL ENG.
BOZEMAN, MT
PRIMARY SPONSOR:
NATIONAL SCIENCE FOUNDATION
PRIMARY FUNDING AMOUNT:
24,500
TIME FRAME:
09 01 73 TO 12 31 75
ABSTRACT:
THE PRIMARY OBJECTIVE OF THIS STUDY IS TO EXPERIMENTALLY STUDY AND ANALYZE HEAT TRANSFER FROM FINNED TUBE BUNDLES IN A FLUIDIZED BED. FIN HEIGHT, FIN THICKNESS, FIN SPACING, FIN MATERIAL, FIN TYPE, PARTICLE DIAMETER, TUBE DIAMETER AND MASS VELOCITY ARE THE VARIABLES BEING CONSIDERED. BY DETERMINING THE EFFECTS THAT THESE VARIABLES HAVE ON HEAT TRANSFER FROM A FINNED TUBE BUNDLE IN A FLUIDIZED BED, A FINNED TUBE BUNDLE IN A FLUIDIZED BED CAN BE MORE ACCURATELY DESIGNED.

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00000481
PROJECT TITLE:
SYNTHETIC FUELS
INVESTIGATORS:
R. CUSHING
RESEARCH INSTITUTION:
NORTHERN NATURAL GAS CO.
CORPORATE R&D
OMAHA, NE 68117
PRIMARY SPONSOR:
NORTHERN NATURAL GAS CO.
TIME FRAME:
01 01 72 TO INDEFINITE
LOCATION:
NE
ABSTRACT:
ANALYTICAL EVALUATION OF THE VARIOUS COAL GASIFICATION PROCESSES.

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00000482
PROJECT TITLE:
INSTRUMENTATION AND PROCESS CONTROL DEVELOPMENT FOR IN SITU COMBUSTION RECOVERY PROCESSES
PROJECT NUMBER:
H0155047
INVESTIGATORS:
H. M. STOLLER; D. A. NORTHROP
RESEARCH INSTITUTION:
SANDIA LABORATORIES, GEOENERGY TECHNOLOGY DEPT.
ALBUQUERQUE, NM 87115
PRIMARY SPONSOR:
U.S. ERDA
U.S. BUREAU OF MINES
TIME FRAME:
12 01 73 TO CONTINUING
LOCATION:
NM WY
ABSTRACT:
THE PROGRAM OBJECTIVE IS THE DEVELOPMENT OF AN INTEGRATED PROCESS CONTROL SYSTEM FOR APPLICATION TO IN SITU COMBUSTION RECOVERY PROCESSES WITH INITIAL EMPHASIS ON IN SITU COAL GASIFICATION. DIAGNOSTIC INSTRUMENTATION WILL BE DEVELOPED AND/OR MODIFIED FOR REMOTE AND DIRECT IN SITU MEASUREMENTS OF THE COMBUSTION PROCESS. SPACE-TIME-PROCESS PARAMETER MODELS WILL BE DEVELOPED BASED ON FIELD TEST RESULTS FOR INCORPORATION INTO A PROCESS CONTROL SYSTEM. LABORATORY STUDIES, PRIMARILY IN MATERIAL PROPERTIES AND MATERIAL COMPATIBILITY AREAS, WILL SUPPLEMENT THE FIELD TEST ACTIVITIES.
REPORTS AND PUBLICATIONS:
1. D. A. NORTHROP. ´INSTRUMENTATION SYSTEMS DEVELOPMENT FOR IN SITU PROCESSING. SANDIA LABORATORIES REPORT SLA-73-0919, SEPTEMBER 1973; 2. R. P. REED, R. W. MORRIS, AND O. J. BIRDSONG. ´TEMPERATURE INSTRUMENTATION FOR THE HANNA RESEARCH SITE WELL 16.´ SANDIA LABORATORIES REPORT SAND-74-0394, JANUARY 1975; 3. D. A. NORTHROP AND H. M. STALLER. ´FEASIBILITY STUDIES OF MEASUREMENT TECHNIQUES APPLIED TO IN SITU COAL GASIFICATION.´ SANDIA LABORATORIES REPORT SAND-75-0028, JANUARY 1975.

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00000483
PROJECT TITLE:
CATALYST DEVELOPMENT FOR THE CONVERSION OF SOLVENT REFINED LIGNITE INTO LIQUID FUELS
INVESTIGATORS:
K. KLABUNDE; V. I. STENBERG

RESEARCH INSTITUTION:
UNIV. OF NORTH DAKOTA, DEPT. OF CHEMISTRY
UNIVERSITY STATION
GRAND FORKS, ND 58201
PRIMARY SPONSOR:
U.S. ERDA, OFFICE OF COAL RESEARCH
PRIMARY FUNDING AMOUNT:
1974 - 46,000 ; 1975 - 45,000
TIME FRAME:
07 01 74 TO 12 31 75
LOCATION:
ND
ABSTRACT:

SOLVENT REFINED LIGNITE RESULTS FROM EXPOSURE OF GREAT PLAINS LIGNITE TO HIGH PRESSURE AND TEMPERATURE UNDER A HYDROGEN ATMOSPHERE AND FILTRATION. WE HAVE BEEN FURTHER HYDROGENATING THIS DEASHED, PARTIALLY REDUCED, BLACK SOLID INTO PREMIUM LIQUID FUELS THROUGH THE USE OF CATALYSTS. THE MAIN PURPOSE OF THE STUDY IS TO OPTIMIZE LIQUIDS IN THIS CONVERSION BY USING MINIMUM CONDITIONS. WE HAVE SPENT CONSIDERABLE TIME ON DEFINING THE STRUCTURE OF SOLVENT REFINED LIGNITE.
THIS PROJECT IS ALSO SUPPORTED BY: NATIONAL SCIENCE FOUNDATION.

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00000464
PROJECT TITLE:
THE DIRECT PRODUCTION OF HYDROCARBONS FROM COAL-STEAM SYSTEMS
INVESTIGATORS:
C. RAI; D. L. STINSON; W. F. DUNCAN
RESEARCH INSTITUTION:
UNIV. OF WYOMING, DEPT. OF MINERAL ENGINEERING
P. O. BOX 3435, UNIV. STATION
LARAMIE, WY 82070
PRIMARY SPONSOR:
U.S. ERDA, OFFICE OF COAL RESEARCH
PRIMARY FUNDING AMOUNT:
1973 - 150,000 ; 1974 - 70,000 ; 1975 - 200,000
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
WY
ABSTRACT:

THE OBJECTIVE OF THIS PROJECT WAS THE DEVELOPMENT OF A PROCESS FOR THE DIRECT REACTION OF EITHER COAL AND STEAM OR CHAR AND STEAM IN A FLUIDIZED BED TO PRODUCE HYDROCARBONS AND OXYGENATED PRODUCTS USING A MULTIPLE CATALYST SYSTEM. WITH THE RECENT EMPHASIS ON THE NATIONAL SHORTAGE OF NATURAL GAS, THE PROJECT HAS BEEN FOCUSED ON THE PRODUCTION OF METHANE, AND RATHER SPECTACULAR RESULTS HAVE BEEN OBTAINED IN THIS AREA BY THE USE OF THE MULTIPLE CATALYST SYSTEM.

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00000465
PROJECT TITLE:
IN SITU COAL GASIFICATION
PROJECT NUMBER:
BA-03-02
INVESTIGATORS:
C. F. BRANDENBURG; G. C. CAMPBELL
PROJECT SUPERVISOR:
LEO A. SCHRIDER
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER
P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82071
SANDIA LABORATORIES
H. STOLLER
P.O. BOX 5800
ALBUQUERQUE, NM 87115
PRIMARY SPONSOR:
U.S. ERDA
PAUL WIEBER
20 MASSACHUSETTS AVE., ROOM 4-18
WASHINGTON, DC 20545
PRIMARY FUNDING AMOUNT:
FY 73 - 325,000 ; FY 74 - 686,000 ; FY 75 - 1,576,000 ;
FY 76 - 2,800,000
TIME FRAME:
07 01 72 TO 07 01 82
LOCATION:
WY
ABSTRACT:

THE FIRST IN SITU COAL GASIFICATION EXPERIMENT IN WYOMING WAS CONDUCTED AT HANNA, FROM MARCH 1973 THROUGH MARCH 1974. FROM SEPTEMBER 1973 THROUGH MARCH 1974 GAS PRODUCTION AVERAGED 1.6 MM SCFD OF 126 BTU/SCF GAS. AN ENERGY BALANCE FOR THIS PERIOD INDICATED FOUR TIMES MORE ENERGY PRODUCED THAN CONSUMED IN OPERATING THE EXPERIMENT. MATERIAL BALANCE CALCULATIONS INDICATED UTILIZATION OF APPROXIMATELY 28 TONS OF COAL PER DAY DURING THE SEPTEMBER 1973-MARCH 1974 PERIOD. CORING OF THE AREA DURING THE 1ST QTR FY 76 INDICATED UTILIZATION OF THE TOP HALF OF THE 30-FEET THICK HANNA #1 SEAM. THIS WAS DUE TO OVERRIDING OF THE GASIFICATION ZONE TO THE TOP OF THE SEAM. THE REASON FOR THIS OVERRIDING WAS DUE TO COMPLETION OF THE WELLS FOUR FEET INTO THE SEAM.
THE SECOND HANNA EXPERIMENT WAS DESIGNED AS A THREE-PHASE STUDY. PHASE I WAS CONDUCTED FROM APRIL THROUGH AUGUST 1975. IT DEMONSTRATED THE FOLLOWING: LINKING

COULD NOT BE ACHIEVED SIMPLY BY HIGH PRESSURE AIR INJECTION; THE PREFERRED FLOW DIRECTION DURING THE ATTEMPTED PNEUMATIC LINK DID NOT COINCIDE WITH THE LABORATORY-DETERMINED MAJOR NATURAL PERMEABILITY DIRECTION; COMPLETION OF WELLS TWO-THIRDS OF THE DISTANCE THROUGH THE SEAM PREVENTED OVERRIDING OF THE GASIFICATION ZONE TO THE TOP OF THE COAL SEAM; DURING A 38-DAY GASIFICATION TEST BETWEEN TWO WELLS GAS PRODUCTION AVERAGED 2.7 MM SCFD OF 152 BTU/SCF GAS WITH CONSUMPTION OF 48 TONS OF COAL PER DAY;/AND THE SYSTEM COULD BE TURNED DOWN BY A FACTOR OF 10 WITH ONLY A 20 PERCENT DROP IN GAS HEATING VALUE WITH ONLY A 2-HOUR

TYPE OF STUDY:

PART OF 'IN-SITU TECHNOLOGY: COAL-UNDERGROUND GASIFICATION,' U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER. THIS PROJECT SUPERSEDES SERIAL NUMBER 00C00215, ERIS QUARTERLY REPORT, VOL.1, NO.1, NOVEMBER, 1975.

REPORTS AND PUBLICATIONS:

1. D. D. FISCHER, C. F. BRANDENBURG ET AL. ENERGY RECOVERY FROM IN SITU COAL GASIFICATION. PRESENTED AT THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS MEETING, ALBUQUERQUE, NM, MARCH 4-6, 1975. PUBLISHED IN PROCEEDINGS OF THAT MEETING. ALSO PUBLISHED IN REVISED FORM IN COAL MINING AND PROCESSING, VOL. 12, NO. 6 (JUNE 1975), PP. 59-63.

2. D. D. FISCHER AND L. A. SCHRIDER. COMPARISON OF RESULTS FROM UNDERGROUND COAL GASIFICATION AND FROM A STIRRED BED PRODUCER. PRESENTED AT THE NATIONAL ALCHE MEETING, HOUSTON, TX, MARCH 16-20, 1975, 34 PP. PUBLISHED AS MICROFICHE. ALSO PUBLISHED IN REVISED FORM IN VOL. 2, COAL PROCESSING TECHNOLOGY, A CHEMICAL ENGINEERING PROGRESS TECHNICAL MANUAL, 1975, PP. 98-103.

3. BRANDENBURG, C. F., D. D. FISCHER, ET AL. THE UNDERGROUND GASIFICATION OF A SUBBITUMINOUS COAL. PREPRINTS FROM THE 169TH NATIONAL MEETING OF THE AMERICAN CHEMICAL SOCIETY, DIVISION OF FUEL CHEMISTRY, VOL. 20, NO. 2, APRIL 6-11, 1975, PP. 3-10.

4. KING, S. B., C. F. BRANDENBURG ET AL. CHARACTERIZATION OF NITROGEN COMPOUNDS IN TAR PRODUCED FROM UNDERGROUND COAL GASIFICATION. PREPRINTS FROM THE 169TH NATIONAL MEETING OF THE AMERICAN CHEMCIAL SOCIETY, DIVISION OF FUEL CHEMISTRY, VOL. 20, NO. 2, APRIL 6-11, 1975, PP. 131-139.

5. FISCHER, D. D., R. M. BOYD ET AL. ENVIRONMENTAL IMPACT STUDIES RELATED TO UNDERGROUND COAL GASIFICATION. PRESENTED AT THE NATIONAL CONFERENCE OF THE AMERICAN SOCIETY FOR PUBLIC ADMINISTRATION, CHICAGO, IL, APRIL 2-4, 1975.

6. SCHRIDER, L. A., C. F. BRANDENBURG, ET AL. THE OUTLOOK FOR UNDERGROUND COAL GASIFICATION. PRESENTED AT THE 1975 LIGNITE SYMPOSIUM, GRAND FORKS, ND, MAY 14-15, 1975, AND AVAILABLE IN PROCEEDINGS FROM THAT MEETING.

7. JENNINGS, J. W. SOME ECONOMIC CONSIDERATIONS OF UNDERGROUND COAL GASIFICATION. PRESENTED AT THE SPE-AIME NORTHERN PLAINS SECTION REGIONAL MEETING, OMAHA, NB, MAY 15-16, 1975 AND PUBLISHED AS SPE PREPRINT 5429.

8. SCHRIDER, L. A. AND D. D. FISCHER. IN SITU COAL GASIFICATION--A UNIQUE MEANS FOR ENERGY RECOVERY. PRESENTED AT THE ASME PRESSURE VESSEL AND PIPING DIVISION'S SECOND QUADRENNIAL MEETING, SAN FRANCISCO, CA, JUNE 23-27, 1975.

9. BRANDENBURG, C. F., R. P. REED, ET AL. INTERPRETATION OF CHEMICAL AND PHYSICAL MEASUREMENTS FROM AN IN SITU COAL GASIFICATION EXPERIMENT. PRESENTED AT THE 50TH ANNUAL FALL MEETING OF THE SPE OF AIME, DALLAS, TX, SEPT. 28-OCT. 1, 1975, AND PUBLISHED AS SPE PREPRINT 5654.

10. CAMPBELL, G. G., C. F. BRANDENBURG, ET AL. UNDERGROUND COAL GASIFICATION AT HANNA, WYOMING. PRESENTED AT THE THERMAL POWER CONFERENCE, WASHINGTON STATE UNIVERSITY, PULLMAN, WA, OCT. 16, 1975 AND PUBLISHED IN PROCEEDINGS OF THAT MEETING.

11. BOYD, R. M. AND D. D. FISCHER. RESOURCE UTILIZATION DURING THE UNDERGROUND COAL GASIFICATION EXPERIMENTS AT HANNA, WYOMING. PRESENTED AT THE AMERICAN NUCLEAR SOCIETY WINTER MEETING, SAN FRANCISCO, CA, NOV. 16-21, 1975.

12. GUNN, R. D. AND D. L. WHITMAN. AN IN SITU COAL GASIFICATION MODEL (FORWARD MODE) FOR FEASIBILITY STUDIES AND DESIGN. LERC/RI-76/2, FEBRUARY 1976.

13. KOTOWSKI, M. D. AND R. D. GUNN. THEORETICAL ASPECTS OF REVERSE COMBUSTION IN THE UNDERGROUND GASIFICATION OF COAL. LERC/RI-76/4, MARCH 1976.

14. DECORA, A. W. AND L. A. SCHRIDER. IN SITU RECOVERY OF FOSSIL ENERGY RESOURCES. PRESENTED AT 41ST MIDYEAR MEETING OF THE AMERICAN PETROLEUM INSTITUTE, REFINING DIVISION, LOS ANGELES, CA, MAY 10-13, 1976, AND PUBLISHED IN THE PROCEEDINGS OF THAT MEETING.

15. SCHRIDER, L. A. AND D. D. FISCHER. IN SITU COAL GASIFICATION--A UNIQUE MEANS OF ENERGY RECOVERY. MECHANICAL ENGINEERING, VOL. 98, NO. 3, MARCH 1976.

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00000486

PROJECT TITLE:

PUMPABILITY OF COAL SLURRIES

INVESTIGATORS:

L. BERG

RESEARCH INSTITUTION:

MONTANA STATE UNIV., DEPT. OF CHEMICAL ENG.
BOZEMAN, MT 59715

PRIMARY SPONSOR:

BURLINGTON NORTHERN, INC.

PRIMARY FUNDING AMOUNT:

1974 - 15,000

TIME FRAME:
01 01 74 TO 06 30 75
STATUS:
COMPLETED 06 30 75
LOCATION:
MT
ABSTRACT:

FINELY GROUND COAL-HYDROCARBON SLURRIES WERE STUDIED TO DETERMINE THEIR PROPERTIES. THE RESEARCH WAS SEPARATED INTO TWO PARTS, AN INITIAL PHASE TO DETERMINE IF THE SLURRIES WOULD SET UP UNDER PIPELINE PRESSURE CONDITIONS AND A MORE DETAILED LOOK AT A CRUDE OIL-COAL SLURRY. BROOKFIELD AND STORMER VISCOMETERS WERE USED TO MEASURE VISCOSITIES.

IT WAS FOUND THAT THE VISCOSITIES OF MOST COAL-HYDROCARBON SLURRIES DID TEND TO INCREASE AFTER PRESSURIZATION TO 500 AND 1000 PSIG FOR SEVERAL WEEKS. HOWEVER, IT WAS FELT THAT THIS VISCOSITY INCREASE WAS NOT SEVERE ENOUGH TO ELIMINATE ANY OF THE LIQUID CARRIERS.

RHEOGRAMS OBTAINED FROM A BROOKFIELD ROTATIONAL VISCOMETER FOR A RANGE OF COAL-CRUDE OIL SLURRIES FROM 0% TO 50% BY WEIGHT SHOWED FOUR DISTINCT RHEOLOGICAL MODELS.

SLURRIES OF CRUDE OIL AND COAL WERE PUMPED THROUGH A ONE INCH SCHEDULE 40 PIPE TO DETERMINE THEIR FLOW CHARACTERISTICS. VARIOUS METHODS WERE USED TO COMPARE THE EFFECTIVE VISCOSITIES OBTAINED FROM THE PIPELOOP'S PRESSURE DROP TO THE APPARENT VISCOSITIES MEASURED BY THE BROOKFIELD VISCOMETER. THE AGREEMENT WAS NOT GOOD. A METHOD DERIVED FOR BINGHAM PLASTICS TO PREDICT PIPELINE PRESSURE DROPS FROM VISCOMETER DATA WAS TRIED. ITS SUCCESS IN PREDICTING PRESSURE DROPS WAS FOUND TO BE LIMITED.

REPORTS AND PUBLICATIONS:
JAMES BLAZEK. M.S. THESIS, MSU, DEPT. OF CHEMICAL ENG. FEASIBILITY STUDY OF COAL-HYDROCARBON SLURRIES. JUNE, 1975.

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00000487
PROJECT TITLE:
MODEL STUDY OF MISSOURI RIVER INTAKE FOR OMAHA PUBLIC POWER DISTRICT'S NEBRASKA CITY POWER PLANT
INVESTIGATORS:
R. R. MARLETTE; G. I. LEWIS
RESEARCH INSTITUTION:
UNIV. OF NEBRASKA, DEPT. OF CIVIL ENG.
LINCOLN, NE 68508
PRIMARY SPONSOR:
OMAHA PUBLIC POWER DISTRICT
PRIMARY FUNDING AMOUNT:
1974 - 25,000 ; 1975 - 10,000
TIME FRAME:
07 01 75 TO 02 28 76
LOCATION:
NE
ABSTRACT:

A LABORATORY INVESTIGATION TO AID IN THE PLANNING AND DESIGN OF A NEW POWER PLANT TO BE LOCATED NEAR NEBRASKA CITY ON THE MISSOURI RIVER. THE RIVER ENGINEERING FACILITY AT MEAD, NEBRASKA HAS BEEN USED FOR TWO LARGE MODELS OF REACHES OF THE MISSOURI RIVER. THE FIRST, BUILT ON A SCALE OF 1:150 OF A 3.4 MILE REACH OF THE RIVER, WAS USED TO DETERMINE THE BEST LOCATION OF THE RIVER INTAKE STRUCTURE FOR COOLING WATER. THE SECOND MODEL, BUILT ON A SCALE OF 1:50, WAS USED TO DETERMINE THE BEST ALIGNMENT, ORIENTATION, AND CONFIGURATION OF THE STRUCTURE TO MINIMIZE THE AMOUNT OF SEDIMENT DRAWN INTO THE PLANT WITH THE REQUIRED 800 CFS OF COOLING WATER. IT IS ANTICIPATED THAT ADDITIONAL MODELING OF RIVER INTAKE STRUCTURES WILL BE DONE TO PROVIDE DESIGN CRITERIA FOR FUTURE POWER PLANT INTAKES AND TO CORRECT DEFICIENCIES IN THE EXISTING POWER PLANTS ALONG THE MISSOURI RIVER AND OTHER ALLUVIAL STREAMS CARRYING LARGE AMOUNTS OF SEDIMENT.

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00000488
PROJECT TITLE:
CHARACTERIZATION OF COAL FOR OPEN-CYCLE MHD POWER GENERATION SYSTEM - TASK A
INVESTIGATORS:
F. E. DIEBOLD
PROJECT SUPERVISOR:
VERNON GRIFFITHS
MONTANA COLLEGE OF MINERAL SCIENCES & TECHNOLOGY
BUTTE, MT 59701
MONTANA ENERGY & MHD RESEARCH & DEVELOPMENT INST.
BUTTE, MT 59701
PRIMARY SPONSOR:
U.S. ERDA, OFFICE OF FOSSIL FUELS
PRIMARY FUNDING AMOUNT:
118,340
TIME FRAME:
04 01 75 TO 07 30 76
LOCATION:
MT
ABSTRACT:

A STUDY TO CHARACTERIZE IN DETAIL MCKAY SEAM COAL TO ASSESS ITS APPLICABILITY TO AND PERFORMANCE IN DIRECT COAL-FIRED MHD ELECTRICAL GENERATION SYSTEMS. EMPHASIS IS ON METHOD DEVELOPMENT FOR SAMPLE ANALYSES COUPLED WITH DEVELOPEMENT OF A SCHEME FOR

GEOCHEMICAL MAPPING.

COAL PROPERTIES TO BE DETERMINED ARE: 1. BTU, PERCENT MOISTURE, VOLATILE MATTER, FIXED CARBON, ASH, S, H, C, O, N, C1 AND F CONTENT.

2. MAJOR INORGANIC CONSTITUENTS OF THE COAL ASH: AL, CA, FE, K, MG, NA, SI, TI.

TRACE ELEMENTS OF THE COAL ASH: AG, AS, B, BA, BE, CD, CO, CR, CS, CU, GA, HG, LA, LI, MN, NI, P, PB, RB, SB, SE, SN, SR, U, V, ZN, SR.

A SECONDARY OBJECTIVE IS A STUDY OF THE POTENTIAL ENVIRONMENTAL PROBLEMS RESULTING BECAUSE OF THE PRESENCE OF INORGANIC ELEMENTS IN THE COAL.

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00000489
PROJECT TITLE:
CORROSION STUDIES OF PRE-HEATER MATERIALS - TASK B
INVESTIGATORS:
W. D. CALLISTER
PROJECT SUPERVISOR:
VERNON GRIFFITHS
MONTANA COLLEGE OF MINERAL SCIENCES AND TECHNOLOGY
BUTTE, MT 59711
MONTANA ENERGY & MHD RESEARCH & DEVELOPMENT INST.
BUTTE, MT 59711
PRIMARY SPONSOR:
U.S. ERDA, OFFICE OF FOSSIL FUELS
PRIMARY FUNDING AMOUNT:
130,824
TIME FRAME:
04 01 75 TO 07 30 76
LOCATION:
MT
ABSTRACT:

A STUDY TO CHARACTERIZE THE BEHAVIOR OF POTENTIAL MHD PREHEATER REFRACTORY MATERIALS UNDER CONDITIONS OF A. A CONTROLLED GASEOUS ATMOSPHERE SIMULATING THE MHD PREHEATER ENVIRONMENT, B. ELEVATED TEMPERATURES, TO 3100 DEGREES FAHRENHEIT, C. EXPOSURE TIMES, TO 500 HOURS, AND D. SIMULTANEOUS EXPOSURE TO SLAGS CONTAINING K2O.

APPARATUS TO CONDUCT TESTS AS ABOVE HAS BEEN SET UP AND TESTS ARE PROCEEDING ON SELECTED MATERIALS. CHARACTERIZATION OF MATERIALS BEFORE AND AFTER TESTING AS TO CHEMICAL COMPOSITIONS, MICROSTRUCTURE, POROSITY AND DENSITY IS CARRIED OUT. INITIAL MATERIALS UNDER TEST ARE DENSE, PURE, AL2O3, MGO AND SOME OTHER MATERIALS.

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00000490
PROJECT TITLE:
PREPARATION OF COALS FOR UTILIZATION IN DIRECT COAL-FIRED MHD GENERATION - TASK C
INVESTIGATORS:
G. F. ZIESING
PROJECT SUPERVISOR:
VERNON GRIFFITHS
MONTANA COLLEGE OF MINERAL SCIENCES AND TECHNOLOGY
BUTTE, MT 59711
MONTANA ENERGY & MHD RESEARCH & DEVELOPMENT INST.
BUTTE, MT 59711
PRIMARY SPONSOR:
U.S. ERDA, OFFICE OF FOSSIL FUELS
PRIMARY FUNDING AMOUNT:
121,628
TIME FRAME:
04 01 75 TO 07 30 76
LOCATION:
MT
ABSTRACT:

WESTERN SUBBITUMINOUS COAL CONTAINS APPRECIABLE QUANTITIES OF WATER, UP TO 25% OR MORE, WHICH SHOULD BE REMOVED PRIOR TO USE IN AN MHD GENERATOR. THIS TASK IS DIRECTED AT AN EXAMINATION OF THE APPLICABILITY OF STANDARD AND ALTERNATIVE THERMAL COAL-DRYING SYSTEMS FOR DEMOISTURIZING WESTERN COALS TO LOW WATER LEVELS. A LABORATORY STUDY OF THERMAL DRYING MECHANICS IS ALSO BEING CONDUCTED. PILOT SIZE TESTS AT VENDOR FACILITIES TO DEMONSTRATE THE LIMITS TO WHICH WESTERN COALS CAN BE THERMALLY DEWATERED AND TO STUDY THE TRADE-OFF AMONG PARTICLE SIZE, GRINDABILITY DEMOISTURIZATION AND ENERGY CONSUMPTION FOR SEVERAL ESTABLISHED PROCESSING SYSTEMS ARE BEING PERFORMED.

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00000491
PROJECT TITLE:
EVALUATION OF GASIFICATION AND LIQUEFACTION PROCESSES USING NORTH DAKOTA LIGNITE
PROJECT SUPERVISOR:
DORAB N. BARIA
UNIV. OF NORTH DAKOTA, ENG. EXP. STATION
GRAND FORKS, ND 58201
PRIMARY SPONSOR:
NORTH DAKOTA STATE WATER COMMISSION
BISMARCK, ND
TIME FRAME:
05 01 74 TO 05 01 75

1.6 ENERGY CONVERSION AND TRANSPORT

LOCATION:
ND

ABSTRACT:

SIX COAL GASIFICATION AND SIX COAL LIQUEFACTION PROCESSES ARE DESCRIBED AND THE COAL CONSUMPTION, WATER REQUIREMENTS AND THERMAL EFFICIENCY OF EACH PROCESS ARE ESTIMATED USING NORTH DAKOTA LIGNITE. THE GASIFICATION PROCESSES REVIEWED ARE THE LURGI, KOPPERS-TOTZEK, CARBON DIOXIDE ACCEPTOR, BIGAS, SYNTHANE AND HYGAS PROCESSES. THE LIQUEFACTION PROCESSES DISCUSSED ARE THE SOLVENT REFINED COAL, SYNTHOIL, H-COAL, CONSOL SYNTHETIC FUEL (CSF), CHAR-OIL-ENERGY DEVELOPMENT (COED) AND COAL-OIL-GAS (COG) PROCESSES.

THE GASIFICATION AND LIQUEFACTION PROCESSES ARE COMPARED ON THE BASES OF 269 BILLION BTU PER DAY TOTAL ENERGY PRODUCTION (EQUIVALENT TO A 227 MMSCFD SYNTHETIC NATURAL GAS COAL GASIFICATION PLANT). THE LIGNITE REQUIREMENTS VARY FROM 9.8 PROCESS TO 11.9 MILLION TONS FOR THE LURGI GASIFICATION PROCESS AND FROM 8.3 MILLION TONS FOR THE COG LIQUFFACTION PROCESS TO 9.6 MILLION TONS FOR THE SYNTHOIL LIQUEFACTION PROCESS.. THE WATER REQUIREMENTS VARY FROM 9654 ACRE-FEET PER YEAR FOR THE KOPPERS-TOTZEK TO 21,106 ACRE-FEET PER YEAR FOR THE HYGAS GASIFICATION PROCESS AND FROM 7049 ACRE-FEET PER YEAR FOR THE H-COAL LIQUEFACTION PROCESS TO 14,626 ACRE-FEET PER YEAR FOR SYNTHOIL LIQUEFACTION PROCESS. THE AVERAGE OVERALL THERMAL EFFICIENCY FOR GASIFICATION PROCESSES IS 64 PERCENT AND THAT FOR LIQUEFACTION PROCESSES IS 76 PERCENT.

THE LARGEST WATER USAGE IS THE LOSS IN THE COOLING TOWER. WITHOUT DETAILED ENGINEERING AND PROCESS DESIGN, TOTAL WATER USAGE IS CALCULATED FROM THE DIFFERENCE IN THERMAL ENERGY PRESENT IN THE LIGNITE FEED AND IN THE FINAL PRODUCTS, AND WOULD BE THE MAXIMUM AMOUNT OF WATER REQUIRED. ACTUAL USAGE COULD SIGNIFICANTLY BE LESS FOR EACH PROCESS DEPENDING ON FINAL DESIGN.

THE LIQUEFACTION PROCESSES HAVE HIGHER THERMAL EFFICIENCY THAN THE GASIFICATION PROCESSES AND USUALLY, BECAUSE OF LESS PROCESSING, CONSUME LESS WATER. THE CHOICE BETWEEN GASIFICATION AND LIQUEFACTION PROCESSES SHOULD NOT BE MADE ON WATER REQUIREMENTS OR ON THERMAL EFFICIENCY, BUT ON THE DEMAND FOR THE PRODUCTS.

TYPE OF STUDY:
PART OF "WEST RIVER STUDY," NORTH DAKOTA STATE WATER COMMISSION.

REPORTS AND PUBLICATIONS:
FINAL REPORT AND APPENDICES. WEST RIVER STUDY: ANALYSIS OF ALTERNATIVES FOR DEVELOPING AND MANAGING WEST RIVER AREAS, WATER AND RELATED LAND RESOURCES. NORTH DAKOTA STATE WATER COMMISSION, 1975.

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00000492
PROJECT TITLE:
OBSERVATION OF INDUSTRIAL PROGRAM AT ANVIL POINTS
PROJECT NUMBER:
BC 0201
PROJECT SUPERVISOR:
R. WISE
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER
P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82071
PRIMARY SPONSOR:
U.S. ERDA
WASHINGTON, DC 20545
PRIMARY FUNDING AMOUNT:
FY 75 - 100,000 ; FY 76 - 108,000
TIME FRAME:
02 01 74 TO 01 01 85
LOCATION:
WY CO
ABSTRACT:
THE OBSERVATION OF THE ABOVEGROUND RETORTING PROGRAM AT ANVIL POINTS, COLORADO, INCLUDES OIL SHALE MINING, CRUSHING, SCREENING, RETORTING, RETORTED SHALE DISPOSAL, AND ENVIRONMENTAL MONITORING PROGRAMS. THE DATA RECEIVED FROM THE PROJECT WILL PROVIDE INFORMATION CONCERNING OIL SHALE RETORT DESIGN, PROCESS OPERATING TECHNIQUES, COSTS, RETORTED SHALE MANAGEMENT, AND ENVIRONMENTAL IMPACTS INCLUDING SOCIO-ECONOMIC IMPACTS.

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00000493
PROJECT TITLE:
TAR SANDS DEVELOPMENT
INVESTIGATORS:
R. CUSHING; J. R. SMITH
RESEARCH INSTITUTION:
NORTHERN NATURAL GAS CO.
CORPORATE R&D
OMAHA, NE 68117
PRIMARY SPONSOR:
NORTHERN NATURAL GAS CO.
TIME FRAME:
05 01 74 TO INDEFINITE
LOCATION:
NE
ABSTRACT:
LABORATORY STUDIES ON THE EXTRACTION OF THE TARS FROM SAND FORMATION.

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00000494
PROJECT TITLE:
HYDROCARBONS IN ROCKS OF PERMIAN AGE
PROJECT NUMBER:
9410-01115
INVESTIGATORS:
E. K. MAUGHAN
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
DENVER, CO 80225
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
UT ID WY MT
ABSTRACT:
STATES TO WHICH PROJECT PERTAINS: UTAH, IDAHO, WYOMING, MONTANA.

PERMIAN SHALE BEDS ARE CARBONACEOUS AND PETROLIFEROUS AND MAY BE PRINCIPAL SOURCE ROCKS FOR PETROLEUM AND NATURAL GAS IN UPPER PALEOZOIC ROCKS OF THE NORTHERN ROCKY MOUNTAIN AREA. THE MEADE PEAK AND RETORT PHOSPHATIC SHALE MEMBERS OF THE PHOSPHORIA FORMATION HAVE BEEN SAMPLED AT 47 PLACES IN UTAH, IDAHO, WYOMING, AND MONTANA. ALL SAMPLES HAVE BEEN ANALYZED FOR THEIR ORGANIC CARBON CONTENT AND OTHER ELEMENTS, AND HYDROCARBONS HAVE BEEN ANALYZED FROM MANY OF THESE PLACES. THESE DATA ARE BEING PLOTTED AND REPORT IS BEING WRITTEN.

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00000495
PROJECT TITLE:
WESTERN INTERIOR CRETACEOUS STUDIES
PROJECT NUMBER:
9410-01084
INVESTIGATORS:
C. W. SPENCERS
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
DENVER, CO 80225
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
MT ND SD WY UT NM NE KA CO

BSTRACT:
STATES TO WHICH PROJECT PERTAINS: COLORADO, KANSAS, NEBRASKA, NEW MEXICO, MONTANA, NORTH DAKOTA, SOUTH DAKOTA, UTAH, WYOMING.
THE PROJECT EMPHASIZES REGIONAL STRATIGRAPHY OF CRETACEOUS SANDSTONES AND SHALES WITHIN AND SURROUNDING STRUCTURAL BASINS OF THE WESTERN INTERIOR SEAWAY. THE OIL AND GAS POTENTIAL OF THESE BASINS IS BEING EVALUATED THROUGH THE CONSTRUCTION OF DETAILED SURFACE AND SUBSURFACE CROSS SECTIONS AND ISOPACHOUS, FACIES, AND PALEOGEOGRAPHIC MAPS. SELECTED TYPICAL STRATIGRAPHIC TRAPS WILL BE MODELED BY DETAILED LOG EXAMINATIONS AND SEISMIC METHODS. THESE DATA WILL AID INDUSTRY BY ACCELERATING DISCOVERY RATES AND MAKING MORE EFFICIENT USE OF AVAILABLE DRILLING RIGS.
THIS PROJECT INCLUDES BASIC RESEARCH ON ORGANIC RICHNESS AND THERMAL MATURATION OF HYDROCARBON SOURCE BEDS. THESE DATA WILL HELP PREDICT TIME OF HYDROCARBON SOURCE BEDS. THESE DATA WILL HELP PREDICT TIME OF HYDROCARBON GENERATION AND SUBSEQUENT MIGRATION AND WILL PROVIDE ADDITIONAL CONTROL FOR PREDICTING UNDISCOVERED RECOVERABLE OIL AND GAS RESOURCES.

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0000496
ROJECT TITLE:
OIL SHALE POTENTIAL OF THE NIOBRARA CHALK AND THE SHARON SPRINGS MEMBER OF THE PIERRE SHALE, SOUTH DAKOTA
NVESTIGATORS:
J. C. HARKSEN; R. N. HELGERSON; R. L. STACH
ESEARCH INSTITUTION:
SOUTH DAKOTA GEOLOGICAL SURVEY
VERMILLION, SD 57069
RIMARY SPONSOR:
SOUTH DAKOTA GEOLOGICAL SURVEY
RIMARY FUNDING AMOUNT:
1974 - 8,000 ; 1975 - 10,000
IME FRAME:
07 01 75 TO 06 30 76
OCATION:
SD
BSTRACT:
DESCRIPTION: A STUDY WAS STARTED IN JUNE, 1974, TO INVESTIGATE THE EXTENT AND OIL SHALE POTENTIAL OF THE SHARON SPRINGS MEMBER OF THE PIERRE SHALE AND THE NIOBRARA CHALK (LATE CRETACEOUS). WORK TO DATE HAS CONSISTED OF DETAILED STRATIGRAPHIC MEASUREMENTS AND SAMPLING WITH A CORE HOLE DRILLED DURING NOVEMBER, 1974, IN THE CENTRAL PART OF SOUTH DAKOTA. FUTURE STATUS OF THE STUDY IS DEPENDENT ON LABORATORY ANALYSES OF THE SAMPLES COLLECTED TO DATE.

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00000497
PROJECT TITLE:
STIMULATION OF TIGHT GAS SANDS WITH NUCLEAR EXPLOSIVES, PROJECT RIO BLANCO
INVESTIGATORS:
G. LUETKEHANS
RESEARCH INSTITUTION:
C.E.R. GEONUCLEAR CORP.
LAS VEGAS, NV 89114
PRIMARY SPONSOR:
U.S. ERDA
C.E.R. GEONUCLEAR CORP.
CONTINENTAL OIL CO.
PRIMARY FUNDING AMOUNT:
1974 - 2,100,000; 1975 - 500,000
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
WY CO UT
ABSTRACT:
AN ESTIMATED 600 TRILLION STANDARD CUBIC FEET OF NATURAL GAS IS AVAILABLE IN THE 3 STATES OF COLORADO, UTAH, AND WYOMING LOCKED IN TIGHT GAS RESERVOIRS, IF A WAY CAN BE FOUND TO EXTRACT IT. THIS EXPERIMENT IS TO SEE IF NUCLEAR EXPLOSIVES CAN SUFFICIENTLY STIMULATE THE RESERVOIR TO MAKE THE GAS PRODUCTION ECONOMIC USING THIS TECHNOLOGY.

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00000498
PROJECT TITLE:
MINERALOGY AND PETROLOGY OF THE GREEN RIVER FORMATION OF UTAH, WYOMING AND COLORADO
PROJECT NUMBER:
DES74-13319 (NSF)
INVESTIGATORS:
A. PABST
RESEARCH INSTITUTION:
UNIV. OF CALIFORNIA, DEPT. OF GEOLOGY & GEOPHYSICS
BERKELEY, CA 94720
PRIMARY SPONSOR:
NATIONAL SCIENCE FOUNDATION, DIV. OF ENV. SCIENCES
PRIMARY FUNDING AMOUNT:
FY 75 - 32,500
TIME FRAME:
10 07 74 TO 09 31 75
LOCATION:
UT WY CO

ABSTRACT:

THIS PROJECT INVOLVES STUDY OF UNUSUAL MINERALS THAT OCCUR IN THE GREEN RIVER FORMATION (UTAH, WYOMING, COLORADO), A SERIES OF LAKE SEDIMENTS AND RELATED ROCKS THAT ALSO CONTAINS THICK ACCUMULATIONS OF HYDROCARBON-RICH LAYERS (OIL SHALES). THE INVESTIGATORS WILL DETERMINE THE PHYSICAL PROPERTIES, CHEMICAL COMPOSITIONS, AND CRYSTAL STRUCTURES OF UNUSUAL MINERALS FOUND IN THE SEDIMENTS. THE RESULTS WILL PROVIDE IDENTIFICATION OF NEW MINERALS, BETTER DATA ABOUT MINERALS PREVIOUSLY IDENTIFIED, AND GENERAL INFORMATION ON THE CONDITIONS OF FORMATION OF THE SEDIMENTS AND ASSOCIATED OIL SHALES.

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00000499

PROJECT TITLE:

IMPACTS OF AGRICULTURAL LAND USE, INCOME, AND EMPLOYMENT RESULTING FROM WATER TRANSFERS TO FACILITATE OIL SHALE DEVELOPMENT

PROJECT NUMBER:

A-027-UTAH (OWRT)

INVESTIGATORS:

N. K. ROBERTS; B. D. GARDNER

RESEARCH INSTITUTION:

UTAH STATE UNIV., ECONOMIC RESEARCH CENTER
MAIN BLDG., ROOM 104
LOGAN, UT 84321

PRIMARY SPONSOR:

U.S. DEPT. OF INTERIOR, OFFICE OF WATER RESEARCH & TECH.

PRIMARY FUNDING AMOUNT:

FY 75 - 19,460

TIME FRAME:

07 01 74 TO 06 30 75

LOCATION:

WY UT CO

ABSTRACT:

EXPECTED DEVELOPMENT OF AN OIL SHALE INDUSTRY IN COLORADO, UTAH AND WYOMING WILL UTILIZE LARGE QUANTITIES OF WATER IN PRODUCTION AND PROCESSING THE SHALE AND IN BUILDING AND MAINTAINING NEW COMMUNITIES. WATER IS ALREADY SCARCE IN THE AREA AND IS GENERALLY THE LIMITING FACTOR TO AGRICULTURAL GROWTH. IF SUPPLIES ARE TO BE AVAILABLE FOR OIL SHALE MINING, PROCESSING, PRODUCT DISTRIBUTION, AND COMMUNITY DEVELOPMENT, IN ALL LIKELIHOOD WATER WILL HAVE TO BE TRANSFERRED FROM AGRICULTURAL USES. THIS RESEARCH WILL REVIEW AND EVALUATE THE HYPOTHESIZED WATER NEEDS OF AN OIL SHALE INDUSTRY OF VARIOUS SIZES AND WILL INVESTIGATE THE ALTERNATIVE OPTIONS OF MEETING THESE REQUIREMENTS. IMPACTS ON AGRICULTURAL LAND USE, INCOME AND EMPLOYMENT WILL BE ANALYZED AS THE PRIMARY THRUST OF THE STUDY. PROGRAMS AND POLICIES TO FACILITATE RESOURCE ADJUSTMENTS WILL RECEIVE ATTENTION, WITH FOCUS UPON ALTERNATIVE ARRANGEMENTS FOR TRANSFERRING WATER.

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00000500

PROJECT TITLE:

PETROLOGY OF THE GREEN RIVER FORMATION AND ASSOCIATED ROCKS IN COLORADO, WYOMING AND UTAH

PROJECT NUMBER:

9430-00122

INVESTIGATORS:

J. R. DYNI

RESEARCH INSTITUTION:

U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
DENVER, CO 80225

PRIMARY SPONSOR:

U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.

TIME FRAME:

07 01 74 TO 06 30 75

LOCATION:

CO WY UT

ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: CO, WY, UT. NAHCOLITE AND BARITE, COMMINGLED WITH DAWSONITE-BEARING OIL SHALE FORMS A SALINE FACIES IN THE GREEN RIVER FORMATION IN THE PICEANCE CREEK BASIN, NORTHWEST COLORADO. THE DETAILED STRATIGRAPHY OF THE SALINE FACIES AT THE DEPOCENTER OF THE BASIN HAS RECENTLY BEEN WORKED OUT AND THE DETAILED LITHOLOGIES OF 13 STRATIGRAPHIC ZONES ESTABLISHED IN THIS STUDY HAVE BEEN DESCRIBED. WITH THIS STRATIGRAPHIC FRAMEWORK, AUTHIGENIC MINERAL FACIES AND THE GEOCHEMISTRY OF THESE ROCKS WILL BE STUDIED IN ORDER TO PROVIDE DATA FOR MODELING THE DEPOSITIONAL ENVIRONMENT FOR THE SALINE MINERALS AND THE OIL SHALE IN THE BASIN.

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00000501

PROJECT TITLE:

PETROLEUM RESERVOIR ROCK OF THE WESTERN UNITED STATES

PROJECT NUMBER:

9410-01086

INVESTIGATORS:

R. F. MAST
DENVER, CO 80225

PRIMARY SPONSOR:

U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.

TIME FRAME:

07 01 74 TO 06 30 75

LOCATION:
WY CO
ABSTRACT:
STATES TO WHICH PROJECT PERTAINS: WY, AND CO.
MAJOR QUANTITIES OF OIL AND GAS HAVE BEEN DISCOVERED IN THE BASIN AREAS OF THE ROCKY MOUNTAIN REGION. IN MANY OF THESE BASINS, FUTURE EXPLORATION TARGETS WILL BE SIGNIFICANTLY DEEPER THAN THOSE DRILLED IN THE PAST. GENERALLY, SANDSTONES BECOME LESS POROUS AND PERMEABLE WITH INCREASING DEPTH. AS A CONSEQUENCE, EXPLORATION IN DEEPER PARTS OF GEOLOGIC BASINS IS SOMETIMES RETARDED. THE OBJECTIVE OF THIS PROJECT IS TO MAP AND INTERPRET POROSITY TRENDS IN MAJOR SANDSTONE UNITS IN THE ROCKY MOUNTAIN REGION. STUDIES WILL BE MADE TO DETERMINE WHAT GEOLOGIC FACTORS INFLUENCE ROCK POROSITY AND PERMEABILITY. STUDIES OF SANDSTONE POROSITY HAVE BEEN COMPLETED ON THE PENNSYLVANIAN TENSLEEP SANDSTONE IN WESTERN WYOMING. MOST OF THE DATA WAS DERIVED FROM LOGS. SIMILAR INVESTIGATIONS ARE NOW IN PROGRESS FOR THE TRIASSIC NUGGET SANDSTONE IN WYOMING AND COLORADO.

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00000502
PROJECT TITLE:
OIL-SHALE DATA ANALYSIS PROGRAM
PROJECT NUMBER:
9430-01410
INVESTIGATORS:
J. R. DONNELL
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
DENVER, CO 80225
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
WY UT CO
ABSTRACT:
STATES TO WHICH PROJECT PERTAINS: CO, UT, WY.
THE DATA STORAGE AND RETRIEVAL SYSTEM IS DESIGNED FOR THE DEC 10 OPERATING SYSTEM TO STORE OIL SHALE FISCHER ASSAY AND SALINE DATA ON DISK AND TO COMPUTE OIL-YIELD THICKNESS AND RESOURCE ESTIMATES. ADDITIONAL SOFTWARE INCLUDE OIL-SHALE PLOT PROGRAMS FOR THE GERBER FLATBED PLOTTER. THIS SYSTEM WILL BE UTILIZED IN THE FUTURE TO GENERATE ISOPACH, ISOVALUES, AND ISORESOURCE MAPS FOR COLORADO AND UTAH. DIGITIZED OVERBURDEN MAPS AND 7 1/2-MINUTE QUADRANGLES WILL BE USED FOR CALCULATING OVERBURDEN ORE ESTIMATES AND FOR EVALUATING LAND THAT MAY BE SUITABLE FOR EITHER IN SITU OR UNDERGROUND EXTRACTION METHODS.

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00000503
PROJECT TITLE:
BASIC INVESTIGATION OF REMOTELY DETECTABLE DEPOSITS OF OIL AND GAS (BIRDDOG)
PROJECT NUMBER:
9410-01405
INVESTIGATORS:
T. J. DONOVAN
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
DENVER, CO 80225
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
WY OK CO
ABSTRACT:
STATES TO WHICH PROJECT PERTAINS: WY, OK, CO.
THE BASIC OBJECTIVE IS TO DEVELOP A RATIONALE FOR AN INTEGRATED REMOTE SENSING-GEOCHEMICAL PETROLEUM EXPLORATION SYSTEM. THE CONCEPT ARISES FROM STATE-OF-THE-ART CAPABILITIES ALREADY DEVELOPED WITHIN THE USGS. PREVIOUS STUDY HAS ISOLATED THE MINERALOGIC AND CHEMICAL EFFECTS OF AT LEAST TWO DISTINCT PROCESSES RELATED TO MICROSEEPAGE. THE DIAGENETICALLY PRODUCED MINERALOGIC AND CHEMICAL ANOMALIES AND RELATED GEOMORPHIC EFFECTS IN OUTCROPPING SURFACE ROCKS SIGNAL THE PRESENCE OF BURIED PETROLEUM AND (OR) NATURAL GAS. THESE ALTERATIONS SHOULD BE AMENABLE FOR DETECTION USING REMOTE IMAGERY AND OTHER HIGH ALTITUDE AND SPACE-ACQUIRED DATA. UNUSUAL ISOTOPIC COMPOSITIONS OF THE SURFACE MINERALIZATIONS PROVIDES GROUND TRUTH. THE ULTIMATE GOAL IS TO DEVELOP A LOW COST INTEGRATED EXPLORATION TECHNIQUE FOR ON-SHORE EXPLORATION, PARTICULARLY BY INDEPENDENT GEOLOGISTS. A FOUR-STEP METHOD IS PLANNED: 1. RECONNAISSANCE OF KEY PETROLEUM PROVINCES WITH COMPUTER-ENHANCED ERTS MSS IMAGERY TO ISOLATE AND ENHANCE THE SLIGHT 'ERASURES' AND 'HAZY AREAS' SHOWN TO OCCUR OVER KNOWN PETROLEUM DEPOSITS. 2. UNDERFLIGHT VERIFICATION USING STRUCTURAL AND GEOMORPHIC ANALYSES, CONFIRMATION AND MAPPING OF ALTERATION ZONES, LOW-LEVEL FALSE-COLOR PHOTOGRAPHY, ETC., USING LIGHT AIRCRAFT. 3. FIELD WORK FOR GROUND TRUTH AND DETAILED MAPPING BASED ON PRIORITIES ASSIGNED IN STEPS (2). 4. GEOPHYSICAL FOLLOW-UP FOR THIRD-DIMENSION DATA IN AREAS POSITIVELY IDENTIFIED IN STEPS (1), (2), AND (3). IMPLEMENTATION

OF AVANT-GARDE TOOLS AND TECHNIQUES SUCH AS HELIUM DETECTION.

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00000504
PROJECT TITLE:
IN SITU OIL SHALE RETORTING: SUPPORTING PROCESS DEVELOPMENT
PROJECT NUMBER:
BC 0103
INVESTIGATORS:
HARRY C. CARPENTER
PROJECT SUPERVISOR:
A. E. HARAK
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER
P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82071
PRIMARY SPONSOR:
U.S. ERDA
WASHINGTON, DC 20545
PRIMARY FUNDING AMOUNT:
FY 75 - 297,000 ; FY 76 - 392,000
TIME FRAME:
07 01 73 TO 01 01 85
LOCATION:
WY
ABSTRACT:
THE MAJOR OBJECTIVE OF THIS PROJECT IS THE DEVELOPMENT OF ENGINEERING DATA FOR IN SITU OIL SHALE RETORTING USING RELATIVELY SMALL PILOT SCALE EQUIPMENT. THESE RESULTS CAN BE OBTAINED MORE QUICKLY AND LESS EXPENSIVELY IN THIS TYPE OF EQUIPMENT THAN IN LARGE SCALE FIELD EXPERIMENTS. TWO RETORTS, A 10-TON AND A 150-TON RETORT, ARE BEING USED TO INVESTIGATE THE EFFECTS OF OPERATING VARIABLES ON THE RECOVERY OF OIL FROM OIL SHALE.
TYPE OF STUDY:
PART OF 'IN-SITU TECHNOLOGY; OILSHALE--IN-SITU PROCESSING,' U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER. THIS PROJECT SUPERSEDES SERIAL NUMBERS 00000231 AND 241, ERIS QUARTERLY REPORT, VOL.1, NO.1, NOVEMBER, 1975.
REPORTS AND PUBLICATIONS:
A. E. HARAK, L. DOCKTER, ET AL. 'OIL SHALE RETORTING IN A 150-TON BATCH-TYPE PILOT PLANT,' BUMINES, RI 7995, 1974.

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00000505
PROJECT TITLE:
IN SITU OIL SHALE RETORTING: SUPPORTING RESEARCH
PROJECT NUMBER:
BC 0102
INVESTIGATORS:
HARRY C. CARPENTER
PROJECT SUPERVISOR:
I. A. JACOBSON
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER
P. O. BOX 3395, UNIV. STATION
LARAMIE, WY 82071
PRIMARY SPONSOR:
U.S. ERDA
WASHINGTON, DC 20545
PRIMARY FUNDING AMOUNT:
FY 75 - 185,000 ; FY 76 - 299,000
TIME FRAME:
07 01 77 TO 01 01 85
LOCATION:
WY
ABSTRACT:
THIS PROJECT IS IN A SUPPORTING ROLE TO THE OVERALL IN SITU OIL SHALE RETORTING PROGRAM AT THE LARAMIE ENERGY RESEARCH CENTER AND FURNISHES REQUIRED LABORATORY DATA FOR THIS PROGRAM. CURRENTLY IN PROGRESS ARE INVESTIGATIONS OF THE EFFECTS OF THE COMPOSITION OF THE RETORTING ATMOSPHERE AND PRESSURE ON OIL YIELD, THE EFFECTS OF LOW TEMPERATURE OXIDATION ON OIL YIELD AND QUALITY, THE RATE OF COMBUSTION OF THE CARBONACEOUS RESIDUE REMAINING IN OIL SHALE AFTER RETORTING, AND THE MATHEMATICAL MODELING OF THE RETORTING PROCESS.
TYPE OF STUDY:
PART OF 'IN-SITU TECHNOLOGY: OILSHALE-INSITU PROCESSING,' U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER. THIS PROJECT SUPERSEDES SERIAL NUMBERS 00000231 AND 00000241, ERIS QUARTERLY REPORT, VOL.1, NO.1, NOVEMBER, 1975.
REPORTS AND PUBLICATIONS:
L. DOCKTER. 'COMBUSTION OF OIL SHALE CARBON RESIDUE,' AICHE 68TH ANNUAL MEETING, OIL SHALE-TAR SANDS SYMPOSIUM, PAPER NO. 92C, NOVEMBER, 1975.

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00000506
PROJECT TITLE:
GASIFICATION OF OIL SHALE
PROJECT NUMBER:
BC 0104
INVESTIGATORS:
HARRY C. CARPENTER
PROJECT SUPERVISOR:
E. L. BURWELL
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER

P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82071
PRIMARY SPONSOR:
U.S. ERDA
WASHINGTON, DC 20545
PRIMARY FUNDING AMOUNT:
FY 75 - 130,000 ; FY 76 - 165,000
TIME FRAME:
07 01 75 TO 01 01 85
LOCATION:
WY
ABSTRACT:

THE MAJOR OBJECTIVE OF THIS INVESTIGATION IS THE DEVELOPMENT OF A TECHNOLOGY WHEREBY A GAS OF ADEQUATE HEATING VALUE TO BE USABLE, CAN BE PRODUCED ON LOCATION AT AN IN SITU OIL SHALE RETORTING PROJECT.

STUDIES HAVE INDICATED THAT A LOW TO MEDIUM (110-300 BTU/FT3) HEATING VALUE GAS MAY BE OBTAINED FROM OIL SHALE USING THE RANGE OF OPERATING PARAMETERS EXPECTED DURING AN IN SITU RECOVERY PROCESS. LABORATORY AND PILOT PLANT SCALE STUDIES ARE BEING PERFORMED TO INVESTIGATE THE INFLUENCES OF THESE PARAMETERS ON THE GAS YIELD FROM OIL SHALE DURING RETORTING.

TYPE OF STUDY:

PART OF 'IN-SITU TECHNOLOGY: OILSHALE-IN-SITU PROCESSING,' U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER. THIS PROJECT SUPERSEDES SERIAL NUMBERS 00000231 AND 00000241, ERIS QUARTERLY REPORT, VOL.1, NO.1, NOVEMBER, 1975.

REPORTS AND PUBLICATIONS:

1. E. L. BURWELL AND I. A. JACOBSON, JR., 'USABLE GAS FROM OIL SHALE DURING RETORTING - EFFECTS OF OXYGEN CONTENT AND PRESSURE.' BUMINES TPR 85, JANUARY, 1975.
2. E. L. BURWELL AND I. A. JACOBSON, JR., 'CONCURRENT GASIFICATION AND RETORTING OF OIL SHALE - A DUAL ENERGY SOURCE.' AIME-SPE 5335, PREPRINT, APRIL, 1975.

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00000507
PROJECT TITLE:
CONVERSION OF SHALE OIL TO FUEL PRODUCTS
PROJECT NUMBER:
BC 0204
INVESTIGATORS:
HARRY C. CARPENTER
PROJECT SUPERVISOR:
P. L. COTTINGHAM
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER
P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82071
PRIMARY SPONSOR:
U.S. ERDA
WASHINGTON, DC 20545
PRIMARY FUNDING AMOUNT:
FY 75 - 125,000 ; FY 76 - 230,000
TIME FRAME:
01 01 63 TO 01 01 85
LOCATION:
WY
ABSTRACT:

THIS PROJECT IS DESIGNED TO INVESTIGATE MEANS OF EFFECTIVELY PRODUCING HIGH QUALITY OIL SHALE FUELS AND CHEMICAL BYPRODUCTS. SHALE OIL PRODUCTS PRODUCED UNDER DIFFERENT CONDITIONS AND FROM DIFFERENT PROCESSES ARE CHARACTERIZED AND REFINED USING SMALL PILOT-SCALE EQUIPMENT. TO A MAJOR DEGREE MODERN REFINING PROCESSES OF THE PETROLEUM INDUSTRY ARE EMPLOYED WITH MODIFICATIONS IN CONDITIONS AS MAY BE FOUND NECESSARY TO YIELD ACCEPTABLE RESULTS WITH SHALE OIL. INNOVATIVE TECHNIQUES SUCH AS CONTROLLED OXIDATION ALSO ARE INVESTIGATED TO A SMALLER EXTENT. THE RESULTS ARE CORRELATED WITH THE CHARACTER- CONSIDERATION. CURRENT EMPHASIS: THE CURRENT EMPHASIS IN THE REFINING PHASE OF THIS PROJECT IS ON THE REFINABILITY OF THE IN SITU CRUDE SHALE OIL, AND ON HYDROGASIFICATION OF IN SITU CRUDE SHALE OIL AND/OR ITS FRACTIONS TO PRODUCE PIPELINE QUALITY GAS. A STUDY ON GASIFICATION OF OIL SHALE TO PRODUCE A USABLE LOW BTU GAS WAS INITIATED AND IS BEING PURSUED.

TYPE OF STUDY:

PART OF 'IN-SITU TECHNOLOGY: OILSHALE-COMPOSITION AND CONVERSION,' U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER. THIS PROJECT SUPERSEDES SERIAL NUMBERS 00000231 AND 00000241, ERIS QUARTERLY REPORT, VOL.1, NO.1, NOVEMBER, 1975.

REPORTS AND PUBLICATIONS:

1. PHILIP L. COTTINGHAM AND LEO G. NICKERSON. DIESEL AND BURNER FUELS FROM HYDROCRACKING IN SITU SHALE OIL. PREPRINTS, DIV. PETROL. CHEM., ACS, V. 20, NO. 2, 1975, PP. 535-540.
2. PHILIP L. COTTINGHAM. DISTRIBUTION OF NITROGEN IN HYDROCRACKED IN SITU SHALE OIL. PREPRINTS, DIV. FUEL CHEM., ACS, V. 20, NO. 2, 1975, P. 175 -ABSTRACT).
3. LAWRENCE K. BARKER. PRODUCING SNG BY HYDROGASIFYING IN SITU CRUDE SHALE OIL. BUMINES RI 8011, 1975, 37 PP.
4. PHILIP L. COTTINGHAM AND LEO G. NICKERSON. DIESEL AND BURNER FUELS FROM HYDROCRACKING IN SITU SHALE OIL. CH. 6 IN HYDROCRACKING AND HYDROTREATING. J. W. WARD AND S. A. OADER, EDS. ACS SYMPOSIUM SERIES, NO. 20. AM. CHEM. SVC., WASHINGTON, DC. 1975, PP. 99-110.

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00000508
PROJECT TITLE:
CHARACTERISTICS OF OIL SHALE

PROJECT NUMBER:
BC 0203
INVESTIGATORS:
WILBUR E. ROBINSON
PROJECT SUPERVISOR:
JOHN WARD SMITH
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER
P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82071
PRIMARY SPONSOR:
U.S. ERDA
WASHINGTON, DC 20545
PRIMARY FUNDING AMOUNT:
FY 75 - 510,000; FY 76 - 764,000
TIME FRAME:
01 01 44 TO CONTINUING
LOCATION:
WY UT CO
ABSTRACT:

THE MAJOR OBJECTIVE OF THIS PROJECT IS TO EVALUATE DOMESTIC OIL-SHALE DEPOSITS AS POTENTIAL SOURCES OF ENERGY AND COPRODUCED PRODUCTS. OIL SHALE REPRESENTS A TREMENDOUS FOSSIL ENERGY SUPPLY, BUT THE NATURE OF THE ROCK AND ITS DEPOSITS MUST BE KNOWN TO PERMIT DEVELOPMENT. EMPHASIS IS ON OIL SHALES OF THE GREEN RIVER FORMATION OF COLORADO, UTAH AND WYOMING, ALTHOUGH OTHER DOMESTIC SHALES SUCH AS THE DEVONIAN NEW ALBANY SHALES OF KENTUCKY AND ITS CORRELATIVES ARE ALSO CONSIDERED. OIL-SHALE CORES AND OTHER TYPES OF SAMPLES ARE OBTAINED EITHER DIRECTLY BY THE RESEARCH CENTER OR FROM OTHER GOVERNMENT OR INDUSTRY SOURCES. THESE SAMPLES ARE ASSAYED TO DETERMINE THEIR OIL POTENTIAL AND MANY ARE ALSO CHARACTERIZED MINERALOGICALLY AND LITHOLOGICALLY TO PERMIT DETAILED EVALUATION OF THE RESOURCE. OTHER STUDIES INCLUDE EVALUATION OF THE MINERALOGICAL, THERMAL, CHEMICAL, AND PHYSICAL PROPERTIES OF THE ROCK, THE ORGANIC CONTENT, AND THE NATURE AND REACTIONS OF ORGANIC MATTER AND MINERAL MATTER. METHODS FOR THESE EVALUATIONS ARE CONTINUOUSLY DEVELOPED AS REQUIRED. THE RESULTING DATA IS CORRELATED TO DEFINE SHALE NATURE AND QUALITY OVER BROAD STRATIGRAPHIC AND GEOGRAPHIC RANGES. PARTICULAR AREAS ARE EVALUATED AS POTENTIAL SITES FOR SPECIFIC DEVELOPMENT TECHNIQUES. SITES SUITABLE FOR IN-SITU DEVELOPMENT ARE CURRENTLY BEING EMPHASIZED.

TYPE OF STUDY:
PART OF 'IN SITU TECHNOLOGY: OILSHALE COMPOSITION AND CONVERSION,' U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER. THIS PROJECT SUPERSEDES SERIAL NUMBERS 00000233 AND 00000240, ERIS QUARTERLY REPORT, VOL.1, NO.1, NOVEMBER, 1975.
REPORTS AND PUBLICATIONS:

1.. JOHN WARD SMITH AND NEIL B. YOUNG, 'DAWSONITE' ITS GEOCHEMISTRY, THERMAL BEHAVIOR, AND EXTRACTION FROM GREEN RIVER OIL SHALE,' COLO. SCHOOL OF MINES QUART., V. 70, NO. 2, JULY 1975, PP. 69-93.
2. NEIL B. YOUNG JOHN WARD SMITH, ET AL. 'DETERMINATION OF CARBONATE MINERALS OF GREEN RIVER FORMATION OIL SHALES,' U.S. BUMINES RI 8006, 1975, 41 PP.
3. DONALD R. JOHNSON, NEIL B. YOUNG, ET AL. 'THERMAL CHARACTERISTICS OF ANALCIME AND ITS POSSIBLE EFFECT ON HEAT REQUIREMENTS FOR OIL-SHALE RETORTING,' FUEL, V. 54, OCTOBER 1975, PP. 146-151.
4. THOMAS N. BEARD AND JOHN WARD SMITH, 'IN-PLACE RECOVERY OF MULTIPLE PRODUCTS FROM COLORADO'S SALINE-MINERAL-BEARING PICEANCE CREEK BASIN,' AICHE 68TH ANNUAL MEETING, OIL SHALE-TAR SANDS SYMPOSIUM, NOVEMBER 1975.

PRE-1975 PUBLICATIONS ARE LISTED IN THE LERC 'OIL SHALE AND SHALE OIL BIBLIOGRAPHY'

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00000509
PROJECT TITLE:
IN SITU OIL RECOVERY FROM TAR SAND DEPOSITS / PETROLEUM AND NATURAL GAS
PROJECT NUMBER:
BB-01
INVESTIGATORS:
C. S. LAND; L. C. MARCHANT
PROJECT SUPERVISOR:
C. Q. CUPPS
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER
P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82071
COOPERATOR:
SOHIO PETROLEUM COMPANY
PRIMARY SPONSOR:
U.S. ERDA, DIV. OF OIL, GAS, & SHALE TECH.
HERMAN FINKE
20 MASSACHUSETTS AVE.
WASHINGTON, DC 20545
PRIMARY FUNDING AMOUNT:
FY 73 - 146,000 ; FY 74 - 165,000 ; FY 75 - 725,000 ;
FY 76 - 930,000
TIME FRAME:
07 01 70 TO 09 30 80
LOCATION:
LARAMIE, ALBANY CO., WY; VERNAL, UINTAH CO., UT
ABSTRACT:

THIS RESEARCH HAS THE OBJECTIVE TO DEVELOP IN SITU METHODS APPLICABLE FOR RECOVERING OIL FROM TAR SAND DEPOSITS WITHOUT EXCESSIVE ENVIRONMENTAL COST. IN SITU METHODS WILL BE REQUIRED, BECAUSE MOST OF THE 30 BILLION BARRELS OR MORE IN KNOWN U.S. TAR SAND DEPOSITS AS WELL AS THE HUGE

RESOURCE IN ATHABASCA, CANADA, OCCURS UNDER TOO THICK OVERBURDEN FOR ECONOMICAL STRIP MINING AND SURFACE EXTRACTION OF THE BITUMEN. BEGINNING IN FY 1971, A CONTINUING PROGRAM OF ANALYZING THE PHYSICAL PROPERTIES OF U.S. TAR SAND DEPOSITS WAS UNDERTAKEN. IN FY 1973 AND 1974 LABORATORY INVESTIGATION WAS MADE OF THE REVERSE COMBUSTION PROCESS FOR TAR SAND OIL RECOVERY. IN FY 1975 AND 1976 A FIELD EXPERIMENT WAS PREPARED AND CONDUCTED USING REVERSE COMBUSTION TO RECOVER OIL FROM A TAR SAND AT THE DEPTH OF 300 FEET AT A SITE IN THE NORTHWEST ASPHALT RIDGE DEPOSIT NEAR VERNAL, UTAH. ABOUT FOUR ADDITIONAL FIELD EXPERIMENTS ARE PLANNED AT THIS SITE OR ELSEWHERE THROUGH FY 1981. THESE EXPERIMENTS WILL DETERMINE THE TECHNICAL FEASIBILITY OF RECOVERING TAR SAND OIL AND THE SEVERITY OF PRODUCTION PROBLEMS ENCOUNTERED.

TYPE OF STUDY:

PART OF ´OIL AND GAS: EXTRACTION,´ U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER. THIS PROJECT SUPERSEDES SERIAL NUMBER 00000230, ERIS QUARTERLY REPORT, VOL. 1, NO. 1, DECEMBER, 1975.

REPORTS AND PUBLICATIONS:

1. L. A. JOHNSON, L. C. MARCHANT, AND C. Q. CUPPS. SERIES OF 5 REPORTS, PROPERTIES OF UTAH TAR SANDS: A. THREEMILE CANYON, P. R. SPRING DEPOSIT, BUMINES RI 7923, 1974, 14 PP. B. SOUTH SEEP RIDGE AREA, P. R. SPRING DEPOSIT, BUMINES RI 8003, 1975, 14 PP. C. ASPHALT WASH AREA; P. R. SPRING DEPOSIT, BUMINES 8030, 1975, 11 PP. D. NORTH SEEP RIDGE AREA, P. R. SPRING DEPOSIT, ERDA LERC/RI-75/6, 1975, 17 PP. E. FLAT ROCK MESA AREA, HILL CREEK DEPOSIT, ERDA LERC/RI-76/5, (MAY 1976).

2. L. C. MARCHANT, C. S. LAND, AND C. Q. CUPPS. EXPERIMENTAL APPROACH TO IN SITU OIL RECOVERY FROM TAR SANDS. ENERGY SOURCES, VOL. 2, NO. 3, 1975, CRANE, RUSSAK & CO., INC., NEW YORK, PP. 293-309.

3. C. L. LAND, F. M. CARLSON, AND C. Q. CUPPS. LABORATORY INVESTIGATION OF REVERSE COMBUSTION IN TWO UTAH TAR SANDS. ERDA LERC/RI-75/2, 1975, 29 PP.

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00000510

PROJECT TITLE:

DEVELOP METHODS TO CHARACTERIZE HEAVY LIQUIDS FROM FOSSIL FUEL ENERGY SOURCES

PROJECT NUMBER:

EB-02-07

INVESTIGATORS:

D. R. LATHAM

PROJECT SUPERVISOR:

W. E. HAINES
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P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82070

PRIMARY SPONSOR:

U.S. ERDA
PAUL DUHAMEL
20 MASSACHUSETTS AVE.
WASHINGTON, DC

PRIMARY FUNDING AMOUNT:

FY 73 - 86,000 ; FY 74 - 86,000 ; FY 75 - 100,000 ; FY 76 - 120,000

TIME FRAME:

07 01 66 TO CONTINUING

LOCATION:

WY

ABSTRACT:

THE OBJECTIVES OF THIS PROJECT ARE: 1. DEVELOP SEPARATION METHODS TO PREPARE ANALYTICALLY SIGNIFICANT FRACTIONS FROM PETROLEUM RESIDUES, TAR SAND BITUMENS, AND LIQUIDS FROM COAL AND OIL SHALE; 2. DEVELOP TECHNIQUES TO CHARACTERIZE THE MAJOR COMPOUND TYPES IN EACH FRACTION; 3. DEVELOP INFORMATION ON THE COMPOUND TYPE RELATIONSHIPS AMONG THE FOSSIL FUEL ENERGY SOURCES; AND 4. APPLY THIS INFORMATION IN SOLVING THE PROBLEMS OF EFFICIENT UTILIZATION OF THESE MATERIALS AS AN ENERGY SOURCE. A SEPARATION-CHARACTERIZATION METHOD THAT WAS DEVELOPED FOR HIGH-BOILING PETROLEUM DISTILLATES WILL BE TESTED, MODIFIED, AND APPLIED TO THE MATERIALS LISTED ABOVE. THE CHARACTERIZATION DATA OBTAINED ARE NEEDED IN EFFICIENTLY PROCESSING AND UTILIZING THE MATERIALS AND IN ENVIRONMENTAL AND EXPLORATION STUDIES.

TYPE OF STUDY:

PART OF ´OIL AND GAS: UTILIZATION,´ U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER.

THIS PROJECT SUPERSEDES SERIAL NUMBER 00000232, ERIS QUARTERLY REPORT, VOL.1, NO.1, NOVEMBER, 1975.

REPORTS AND PUBLICATIONS:

1. T. E. COGSWELL, J. F. MCKAY, ET AL. GEL PERMEATION CHROMATOGRAPHIC SEPARATION OF PETROLEUM ACIDS. ANAL. CHEM. 43, 645 (1971);

2. D. M. JEWELL, J. H. WEBER, ET AL. ION EXCHANGE COORDINATION, AND ADSORPTION CHROMATOGRAPHIC SEPARATION OF HEAVYEND PETROLEUM DISTILLATES. ANAL. CHEM. 44, 1391 (1972)

3. J. F. MCKAY, D. M. JEWELL, ET AL. SEPARATION OF ACIDIC COMPOUND TYPES ISOLATED FROM HIGHBOILING PETROLEUM DISTILLATES. SEPARATION SCI., 7 (4) 361 (1972);

4. J. F. MCKAY AND D. R. LATHAM, FLUORESCENCE SPECTROSCOPY IN THE CHARACTERIZATION OF HIGHBOILING PETROLEUM DISTILLATES. ANAL. CHEM. 44, 2132 (1972);

5. J. F. MCKAY AND D. R. LATHAM. POLYAROMATIC HYDROCARBONS IN HIGH-BOILING PETROLEUM DISTILLATES. ISOLATION BY GEL PERMEATION CHROMATOGRAPHY AND IDENTIFICATION BY FLUORESCENCE SPECTROSCOPY. ANAL.

CHEM. 45, 1050 (1973)
6. J. F. MCKAY, T. E. COGSWELL, ET. AL. ANALYTICAL METHODS FOR THE ANALYSIS OF BASES IN HIGH-BOILING PETROLEUM DISTILLATES. PREPRINTS, DIV. PET. CHEM. 20 (1), 12, 1975;
7. J. F. MCKAY, T. E. COGSWELL, ET. AL. ANALYSIS OF ACIDS IN HIGH-BOILING PETROLEUM DISTILLATES. FUEL 54, 50 (1975).

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00000511
PROJECT TITLE:
IN SITU OIL RECOVERY FROM TAR SAND DEPOSITS: CHEMICAL STUDIES (THE COMMONLY USED SHORT TITLE IS TAR SANDS CHEMISTRY)
PROJECT NUMBER:
P6-01-01
INVESTIGATORS:
S. M. DORRENCE
PROJECT SUPERVISOR:
W. E. HAINES; C. Q. CUPPS
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER
P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82070
PRIMARY SPONSOR:
U.S. ERDA
20 MASSACHUSETTS AVE., N.W.
WASHINGTON, DC 20545
PRIMARY FUNDING AMOUNT:
FY 73 - 125,000 ; FY 74 - 145,000 ; FY 75 - 200,000 ; FY 76 - 300,000
TIME FRAME:
07 01 72 TO 06 30 84
LOCATION:
LARAMIE, WY - RESEARCH; UT - FIELD WORK (UINTAH BASIN)
ABSTRACT:
THIS PROJECT IS INVOLVED WITH DEVELOPMENT OF METHODS FOR CHEMICAL CHARACTERIZATION OF OILS, CHARS, GASES, AND WATER PRODUCED DURING LABORATORY AND FIELD EXPERIMENTS DESIGNED TO DEVELOP IN SITU RECOVERY OF TAR SANDS. THE OILS ARE BEING CHARACTERIZED WITH SPECIAL EMPHASIS ON THEIR REFINABILITY AND FUEL VALUE. SOLVENT-EXTRACTED TAR SAND BITUMENS ARE BEING INVESTIGATED TO DETERMINE CHEMICAL COMPOSITION AND PHYSICAL PROPERTIES TO ESTABLISH HOW THESE PARAMETERS AFFECT RECOVERY, AND TO PROVIDE BASELINES TO EVALUATE THE EXTENT TO WHICH PRODUCED OILS ARE UPGRADED COMPARED TO ORIGINAL BITUMENS. GASES AND WATER-SOLUBLE MATERIALS PRODUCED DURING RECOVERY EXPERIMENTS ARE BEING ANALYZED TO ASSESS ENVIRONMENTAL IMPACT WHEN IT IS NECESSARY, METHODS OF REMOVAL OF POTENTIALLY DETRIMENTAL MATERIALS WILL BE DEVELOPED. PYROLYSIS STUDIES OF TAR SANDS ARE BEING CONDUCTED TO EVALUATE THE EFFECTS THAT PARAMETERS SUCH AS TAR SAND SOURCE, TEMPERATURE, AND ATMOSPHERE HAVE ON KINETICS AND PRODUCTS.
TYPE OF STUDY:
PART OF 'OIL AND GAS - EXTRACTION,' U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER.
THIS PROJECT SUPERSEDES SERIAL NUMBER 00000234, ERIS QUARTERLY REPORT VOL.1, NO.1, NOVEMBER, 1975.
REPORTS AND PUBLICATIONS:
J. W. BUNGER. PREPRINTS, DIV. OF FUEL CHEMISTRY, AMERICAN CHEM. SOC., V. 15, FEB. 1974, PP. 231-241.

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00000512
PROJECT TITLE:
IN SITU OIL SHALE RETORTING: FIELD FRACTURING AND RECOVERY PROCESS DEVELOPMENT
PROJECT NUMBER:
BC 0101
INVESTIGATORS:
HARRY C. CARPENTER
PROJECT SUPERVISOR:
ANDREW LONG, JR.
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER
P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82071
PRIMARY SPONSOR:
U.S. ERDA
WASHINGTON, DC 20545
PRIMARY FUNDING AMOUNT:
FY 75 - 580,000 ; FY 76 - 927,000
TIME FRAME:
01 01 72 TO 01 01 85
LOCATION:
WY
ABSTRACT:
THIS PROJECT IS INVESTIGATING THE 'TRUE' IN SITU METHOD OF PROCESSING OIL SHALE IN AN EFFORT TO ADVANCE THE TECHNOLOGY TO THE POINT OF COMMERCIAL FEASIBILITY. OIL RECOVERY FROM THE VAST OIL SHALE DEPOSITS OF THE WESTERN UNITED STATES (ESTIMATED TO CONTAIN 600 BILLION BBL OF COMMERCIALLY ATTRACTIVE SHALE) BY THE IN SITU METHOD HAS BEEN RECOGNIZED TO HAVE SEVERAL ADVANTAGES OVER ABOVE-GROUND MINING AND RETORTING METHODS. SOME OF THESE ADVANTAGES INCLUDE THE ELIMINATION OF MINING, CRUSHING AND TRANSPORTATION OF THE RAW SHALE AND THE PROBLEM OF SPENT SHALE DISPOSAL. IN SITU RETORTING SHOULD ALSO BE LESS ENVIRONMENTALLY DETRIMENTAL. FOR THESE REASONS STUDIES HAVE BEEN STARTED AND ARE CONTINUING IN AN EFFORT TO DEVELOP A TECHNOLOGY WHEREBY THIS RESOURCE CAN BE RECOVERED BY IN SITU METHODS.

TYPE OF STUDY:
PART OF 'IN-SITU TECHNOLOGY: OILSHALE-IN-SITU PROCESSING,' U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER. THIS PROJECT SUPERSEDES SERIAL NUMBER 00000236, ERIS QUARTERLY REPORT, VOL. 1, NO. 1, NOVEMBER, 1975.

REPORTS AND PUBLICATIONS:
1. A. LONG. 'FRACTURING OIL SHALE FOR IN SITU RETORTING EXPERIMENTS.' AICHE 68TH ANNUAL MEETING, OIL SHALE-TAR SANDS SYMPOSIUM, PAPER NO. 92A.
2. LEROY DOCKTER. 'THE CREATION OF HIGH FLUID CONDUCTIVITY IN AN OIL SHALE BY INJECTION OF EXPLOSIVES.' PROC. OF THE SYMP. ON STIMULATION OF LOW PERMEABILITY RESERVOIRS, COLORADO SCHOOL OF MINES, GOLDEN, CO, FEB. 1976.

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00000513

PROJECT TITLE:
OIL SHALE PROCESS EVALUATION
FROM PRODUCT CHARACTERISTICS

PROJECT NUMBER:
BC0106

INVESTIGATORS:
R. E. POULSON

PROJECT SUPERVISOR:
H. B. JENSEN
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER
P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82071

PRIMARY SPONSOR:
U.S. ERDA

SECONDARY SPONSORS:
U.S. DEPT. OF AGRICULTURE

PRIMARY FUNDING AMOUNT:
FY 75 - 265,000 ; FY 76 - 355,000

TIME FRAME:
01 19 75 TO CONTINUING

LOCATION:
WY CO

ABSTRACT:
OBJECTIVE: PROVIDE METHODS FOR DEFINING PROPERTIES OF OIL-SHALE FLUID PRODUCT AND TO APPLY SUCH METHODS TO SHALE OILS RESULTING FROM VARIOUS PROCESSES 1. TO AID IN THEIR UTILIZATION AND 2. TO DEFINE PRIMARY PROCESSES IN THEIR PRODUCTION.
BACKGROUND: THE CHARACTER OF SHALE OIL CAN REMAIN CONSTANT IF PRODUCED FROM A FIXED RETORTING SYSTEM. DIFFERENT RETORTING OR RETORTING PLUS REFINING METHODS GIVE DIFFERENT OILS HOWEVER. FROM THE LIMITED DATA AVAILABLEIN SITU-PRODUCED CRUDE SHALE OILS APPEAR TO BE SIGNIFICANTLY DIFFERENT FROM ABOVEGROUND-PRODUCED CRUDE SHALE OILS. THE IMPLICATIONS OF THESE DIFFERENCES IN TERMS OF PRODUCT UTILITY AND EFFICIENCY OF RESOURCE UTILIZATION CAN BE ASCERTAINED ONLY BY DETERMINING THE PERTINENT DIFFERENCES IN VARIOUS TYPES OF SHALE OILS. CONSTRAINTS TO CONTROL ENVIRONMENTAL RESIDUES DEMAND DEVELOPMENT OF SPECIALIZED CHARACTERIZATION PROCEDURES TO AID IN WASTE CLEANUP AND UTILIZATION PROJECTS.
PROPOSED WORK: ANALYTICAL TECHNIQUES WILL BE DEVELOPED AND APPLIED AS REQUIRED BY CURRENT AND PROJECTED PROGRAMS. A PROGRAM FOR STANDARDIZING AND ACCELERATING, MODERN SHALE-OIL CHARACTERIZATION, CHARACTERIZATION OF SHALE OILS OF VARIOUS TYPES INCLUDING RAW, UPGRADED AND REFINED (SYNCRUDES) WILL BE CONTINUED. PRODUCT OILS FROM THE CONTROLLED STATE RETORT (WHICH WILL HAVE ACCURATELY KNOWN TIME-TEMPERATURE-MATRIX HISTORIES) WILL BE COMPARED WITH OTHER OILS. STUDY OF OIL SHALE PRODUCTS IS EXPECTED TO BE EXTENDED TO STEAM PYROLYSIS PROCESSES THROUGH A CONTRACT WITH COLORADO SCHOOL OF MINES CHEMICAL ENGINEERING. METHODS FOR CHARACTERIZATION OF SHALE-OIL PRODUCTION WASTE FLUIDS WILL BE CONTINUED. PRECISION OF METHODS OF SHALE-OIL ASSAY OF OIL SHALE WILL BE DETERMINED COOPERATIVELY THROUGH ASTM.

TYPE OF STUDY:
PART OF 'OIL AND GAS: EXTRACTION,' U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER.
THIS PROJECT SUPERSEDES SERIAL NUMBER 00000236, ERIS QUARTERLY REPORT VOL.1, NO. 1, NOVEMBER, 1975.

REPORTS AND PUBLICATIONS:
L. P. JACKSON, A. W. DECORA. 'KEROGEN CONSTITUENTS: REDUCED CHLOROPHYLLIN AS A MODEL FOR THE PRECURSORS OF NITROGENOUS COMPOUNDS IN SHALE OIL'. PREPRINTS, DIV. FUEL CHEM., ACS, V.20, NO.2, 1975, PP 147-153.
J. R. MORANDI, R. E. POULSON. 'NITROGEN TYPES IN LIGHT DISTILLATES FROM ABOVEGROUND AND IN SITU COMBUSTION PRODUCED SHALE OIL'. PREPRINTS, DIV. FUEL CHEM., ACS, V.20, NO.2, 1975, PP. 162-174.
C. M. FROST, R. E. POULSON. 'NITROGEN TYPES IN SNYCRUDES FROM IN SITU CRUDE SHALE OIL'. PREPRINTS, DIV. FUEL CHEM., ACS, V.20, NO.2, 1975, PP. 176-182.
R. E. POULSON. 'NITROGEN AND SULFUR IN RAW AND REFINED SHALE OILS'. PREPRINTS, DIV. FUEL CHEM., ACS, V.20, NO.2, 1975, PP. 183-197.
J. J. CUMMINS, R. E. POULSON, ET. AL. 'NITROGEN-COMPOUND TYPES IN GREEN RIVER OIL SHALE AND IN KEROGEN DEGRADATION PRODUCTS'. PREPRINTS, DIV. FUEL CHEM., ACS, V.20, NO.2, 1975, PP. 154-161.
C. M. FROST, R. E. POULSON, ET. AL. 'HYDRODENITRIFICATION OF CRUDE SHALE OIL'. LERC/RI-75/3, JULY 1975, 19 PP.
R. E. POULSON, C. M. FROST, ET. AL. 'CHARACTERISTICS OF SYNTHETIC CRUDE FROM CRUDE SHALE OIL PRODUCED BY IN SITU COMBUSTION RETORTING'. ACS ADVANCES IN CHEMISTRY SERIES. IN PRESS.
C. M. FROST, R. E. POULSON, ET. AL. 'PRODUCTION OF SYNTHETIC CRUDE FROM CRUDE SHALE OIL PRODUCED BY IN SITU

COMBUSTION RETORTING´. ACS ADVANCES IN CHEMISTRY SERIES. IN PRESS.
H. F. SILVER, N. H. WANG, ET. AL. ´A COMPARISON OF SHALE OIL DENITRIFICATION REACTIONS OVER CO-MO AND NI-W CATALYSTS´. RECENT ADVANCES IN THE SCIENCE AND TECHNOLOGY OF OIL SHALE (ANN ARBOR SCIENCE). IN PRESS.
H. F. SILVER, N. H. WANG, ET. AL. ´COMPARISON OF CO-MO AND NI-W CATALYSTS IN THE DENITRIFICATION OF SHALE GAS OIL´. AICHE SYMPOSIUM SERIES. IN PRESS.
C. M. FROST, R. E. POULSON, ET AL. ´PRODUCTION AND CHARACTERISTICS OF SYNTHETIC CRUDE FROM CRUDE SHALE OIL PRODUCED BY IN SITU COMBUSTION RETORTING´. ERDA-R.I. IN REVIEW STAGE.
ALL AVAILABLE FROM: U.S. ERDA - LERC, P. O. BOX 3395, UNIVERSITY STATION, LARAMIE, WY 82071

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00000514
PROJECT TITLE:
ENVIRONMENTAL ASPECTS OF IN SITU OIL-SHALE PROCESSING
PROJECT NUMBER:
BC0105
INVESTIGATORS:
R. E. POULSON
PROJECT SUPERVISOR:
H. B. JENSEN
U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER
P.O. BOX 3395, UNIV. STATION
LARAMIE, WY 82071
PRIMARY SPONSOR:
U.S. ERDA
PRIMARY FUNDING AMOUNT:
FY 75 - 630,000 ; FY 76 - 760,000
TIME FRAME:
01 19 75 TO CONTINUING
LOCATION:
WY, CO, UT FIELD WORK - LABORATORY WORK IN MANY STATES
ABSTRACT:

OBJECTIVE: TO ASSESS AND PLAN FOR IN SITU OIL-SHALE PROCESSING ENVIRONMENTAL CONCERNS, TO DESIGN AND CARRY OUT SUBPROJECTS TO DETERMINE WHAT OIL-SHALE PRODUCTS OR WASTES MIGHT BE PRODUCED AND WHAT EFFECTS THEY MIGHT HAVE ON THE ENVIRONMENT AND TO STUDY HOW THEY MIGHT BE MITIGATED.
BACKGROUND: OVER THE COMING DECADE AN ACCELERATED EFFORT IN DEVELOPMENT OF IN SITU OIL-SHALE METHODS IS ANTICIPATED. TO OBTAIN MEANINGFUL ENVIRONMENTAL BASELINE DATA IN REGIONS OF EXPECTED IN SITU EXPERIMENTATION, IMMEDIATE AND CONTINUING DATA COLLECTION IS NECESSARY. IN ADDITION TO BASELINE DATA LOGGING, SUPPORTING RESEARCH TO PINPOINT POSSIBLE PROBLEM AREAS AND TO GET ABATEMENT TECHNOLOGY DEVELOPED. THIS PROJECT HAS THE RESPONSIBILITY FOR MEASUREMENT OF ENVIRONMENTAL RESIDUALS IN THE ERDA-LERC OIL-SHALE PROCESSING DEVELOPMENT WORK AND GATHERING INFORMATION FOR ENVIRONMENTAL ASSESSMENTS WHICH WILL BE REQUIRED FOR THOSE PROJECTS.
JUSTIFICATION: UNDER NEPA, CONTROL OF ENVIRONMENTAL RESIDUALS WILL BE MANDATORY IN ANY PROPOSED COMMERCIALIZATION OF SHALE-OIL PRODUCTION. THIS PROJECT IS REQUIRED TO DETECT AND CLASSIFY ENVIRONMENTAL RESIDUALS FROM IN SITU PROCESSING OF OIL SHALE.
PROPOSED WORK: DEVELOP AND APPLY STRATEGY FOR PREPARATION OF ENVIRONMENTAL ASSESSMENT TO MEET THE NEEDS OF OIL-SHALE PROJECTS AS THEY DEVELOP. STRATEGY PERTAINS TO PREOPERATIONAL, OPERATIONAL, AND POSTOPERATIONAL ASSESSMENTS AND CONTAINS MONITORING PLANS. PROJECTS WILL INCLUDE ESTABLISHING MINITOR WELLS, COREHOLES, HYDROLOGICAL AND METEOROLOGICAL AMBIENT MODELS, AND REVEGETATION STUDIES IN REGIONS OF KNOWN OR EXPECTED IN SITU ACTIVITY. WATER AND OFFGAS CLEANUP WORK WILL CONTINUE. PRODUCT CHARACTERIZATION (OILS, WATERS, GASES, SOLIDS) WILL CONTINUE. THE FATE OF INORGANIC AND ORGANIC COMPONENTS IN PROCESSING EFFLUENTS WILL CONTINUE. PARTICIPATION IN BIOLOGICAL EFFECTS STUDIES OF OIL-SHALE PRODUCTS WILL CONTINUE. THE DEVELOPMENT OF A UTILIZATION PROGRAM FOR TRONA WATER AND BLACK TRONA WATER IN THE GREEN RIVER BASIN OIL-SHALE REGIONS WILL CONTINUE. COOPERATION WITH OTHER AGENCIES AND PROJECTS IN OBTAINING SPECIAL ENVIRONMENTAL INFORMATION WILL CONTINUE.

TYPE OF STUDY:
PART OF ´IN-SITU TECHNOLOGY: OILSHALE IN-SITU PROCESSING,´ U.S. ERDA, LARAMIE ENERGY RESEARCH CENTER. THIS PROJECT SUPERSEDES SERIAL NUMBER 00000242, ERIS QUARTERLY REPORT, VOL.1, NO.1, NOVEMBER, 1975.
REPORTS AND PUBLICATIONS:
R. E. POULSON AND H. B. JENSEN. ´ENVIRONMENTAL EFFECTS OF IN SITU RECOVERY OF SHALE OIL´ IN PROCEEDINGS OF UCSD-NSF/RANN WORKSHOP ON ´IN SITU RECOVERY OF SHALE OIL,´ S. S. PENNER, ED., NSF/RANN REPORT #75-001.
R. D. KERR AND W. F. MCTERNAN. ´AN ENVIRONMENTAL RECONNAISSANCE STUDY FOR SWEETWATER COUNTY IN SITU OIL SHALE RESEARCH.´ UNIVERSITY OF WYOMING, WATER RESOURCES RESEARCH INSTITUTE. 140 PP. WITH 43 ITEMS IN APPENDICES. JULY 31, 1975.
L. P. JACKSON, R. E. POULSON, ET. AL. ´CHARACTERISTICS AND POSSIBLE ROLES OF VARIOUS WATERS RELATING TO IN SITU OIL SHALE PROCESSING.´ COLORADO SCHOOL OF MINES QUARTERLY, V.70, NO.4, PP. 105-134.
D. A. BECKER, ED. ´MINOR ELEMENTS IN OIL SHALE AND OIL SHALE PRODUCTS.´ PRESENTED AT THE NBS/EPA WORKSHOP ON STANDARD REFERENCE MATERIALS FOR OIL SHALE ENVIRONMENTAL CONCERNS, GAITHERSBURG, MARYLAND. NOVEMBER 1975 TO APPEAR IN PROCEEDINGS.
ALL AVAILABLE FROM: U.S. ERDA - LERC, P.O. BOX 3395, UNIVERSITY STATION, LARAMIE, WY 82071

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C0000515
PROJECT TITLE:
SOLAR DOMESTIC HOT WATER HEATING PROGRAM IN THE PACIFIC NORTHWEST: MODELING AND TESTING
INVESTIGATORS:
P. M. SOOT; W. GOLDBACH; R. LEMING
RESEARCH INSTITUTION:
PACIFIC POWER & LIGHT CO.
COAL RESOURCES
PORTLAND, OR 97204
PRIMARY SPONSOR:
PACIFIC POWER & LIGHT CO.
PRIMARY FUNDING AMOUNT:
PROPRIETARY
TIME FRAME:
10 01 74 TO 06 30 76
LOCATION:
OR CO WY
ABSTRACT:

SOLAR DOMESTIC HOT WATER HEATING SYSTEMS ARE BEING INSTALLED IN FIVE CITIES IN THE NORTHWEST. INSTRUMENTATION WILL MONITOR AND RECORD OPERATING VARIABLES DURING AT LEAST A ONE YEAR TEST PERIOD. CONCURRENTLY, A COMPUTER MODEL WILL SIMULATE THE INSTALLATIONS SO AS TO PROVIDE MODEL VERIFICATION. THE HEATING SYSTEMS CONSIST OF COMMERCIALLY AVAILABLE EQUIPMENT FROM TWO DIFFERENT MANUFACTURERS. DAYLIN, WITH MANUFACTURING FACILITIES IN ISRAEL, IS THE SUPPLIER FOR THREE OF THE INSTALLATIONS, IN PORTLAND AND EUGENE, OREGON, AND IN CASPER, WYOMING. ENERGEX, IN LAS VEGAS, NEVADA, WILL SUPPLY EQUIPMENT FOR GRANTS PASS, OREGON, AND YAKIMA, WASHINGTON.

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C0000516
PROJECT TITLE:
A STUDY OF SOLAR HEAT COLLECTORS BY MECHANICAL ENGINEERING AND PHYSICS STUDENTS
INVESTIGATORS:
D. C. HOPKINS
RESEARCH INSTITUTION:
SOUTH DAKOTA SCHOOL OF MINES & TECHNOLOGY, DEPT. OF PHYSICS
RAPID CITY, SD 57701
PRIMARY SPONSOR:
NATIONAL SCIENCE FOUNDATION
PRIMARY FUNDING AMOUNT:
1974 - 6,000 ; 1975 - 6,000
TIME FRAME:
03 01 74 TO 05 31 75
LOCATION:
SD
ABSTRACT:

VARIOUS INNOVATIVE TYPES OF SOLAR HEAT COLLECTORS HAVE BEEN BUILT AND ARE BEING TESTED. THIS IS A STUDENT RESEARCH PARTICIPATION PROJECT IN WHICH MAXIMUM USE IS BEING MADE OF THEIR ENTHUSIASM AND INNOVATIVE IDEAS.

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C0000517
PROJECT TITLE:
YELLOWSTONE LAKE HEAT FLOW
PROJECT NUMBER:
SMU 86-96; NSF-GA 43424
INVESTIGATORS:
D. D. BLACKWELL
RESEARCH INSTITUTION:
SOUTHERN METHODIST UNIV., DEPT. OF GEOLOGICAL SCIENCES
INSTITUTE FOR THE STUDY OF EARTH & MAN
DALLAS, TX 75275
PRIMARY SPONSOR:
UNIV. OF UTAH
PRIMARY FUNDING AMOUNT:
1974 - 2,000 ; 1975 - 5,000
TIME FRAME:
06 01 74 TO 11 30 75
LOCATION:
TX WY
ABSTRACT:

MARINE TYPE HEAT FLOW MEASUREMENTS WERE MADE IN YELLOWSTONE LAKE DURING 1974. THIS PROJECT IS PART OF A STUDY OF THE GEOPHYSICS OF THE LAKE AND OF YELLOWSTONE NATIONAL PARK CARRIED OUT PRIMARILY BY PERSONNEL FROM THE UNIVERSITY OF UTAH. OTHER ACTIVITIES IN THE STUDY INCLUDE GRAVITY AND MAGNETIC INTERPRETATION, COLLECTION OF MICROEARTHQUAKE DATA, A SEISMIC REFLECTION SURVEY OF YELLOWSTONE LAKE, AND GEOLOGIC ANALYSIS OF CORE SAMPLES COLLECTED FROM THE LAKE, INCLUDING PALEOMAGNETIC STUDIES. THE OBJECT OF THE HEAT FLOW DATA WILL BE TO INVESTIGATE THE GEOTHERMAL CHARACTER OF YELLOWSTONE LAKE. SOME FEATURES OF THE LAKE BOTTOM ARE CONSIDERED VERY RECENT EXPLOSION FEATURES, AND THE LAKE CROSSES THE EDGE OF THE MAIN CALDERS AND EXTENDS SEVERAL MILES INTO THE BASEMENT ROCKS SURROUNDING THE CALDERA. THUS THE DATA MAY RESULT IN A PROFILE ACROSS ACTIVE GEOTHERMAL AREAS, A CALDERA AND CALDERA MARGIN. YELLOWSTONE NATIONAL PARK IS ONE OF THE LARGEST GEOTHERMAL AREAS IN THE WORLD AND ALTHOUGH IT IS NOT LIKELY TO BE EXPLOITED COMMERCIALLY, IT STILL CAN SERVE AS A TEST AREA FOR EXPLAINING BEHAVIOR IN OTHER GEOTHERMAL SYSTEMS WHICH COULD BE EXPLOITED.

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00000518
PROJECT TITLE:
APPLICATION OF THE FINITE-ELEMENT METHOD TO GEOTHERMAL STUDIES
PROJECT NUMBER:
DES75-09631 (NSF)
INVESTIGATORS:
T. C. LEE
RESEARCH INSTITUTION:
UNIV. OF CALIFORNIA
GRADUATE SCHOOL
RIVERSIDE, CA 92502
PRIMARY SPONSOR:
NATIONAL SCIENCE FOUNDATION, DIV. OF ENV. SCIENCES
PRIMARY FUNDING AMOUNT:
FY 75 - 16,500
TIME FRAME:
04 01 75 TO 03 31 76
LOCATION:
MT NM CA
APSTRACT:

MEASURED HEAT FLOWS ARE OFTEN MASKED FROM THE UNDISTURBED VALUES BY NEAR-SURFACE CONDITONS SUCH AS VARIATION IN SURFACE TEMPERATURE, TOPOGRAPHIC RELIEF, LATERAL CHANGES IN THERMAL CONDUCTIVITY, SEDIMENTATION, EROSION, HEAT GENERATION, GROUND WATER MOVEMENT AND LOCAL THERMAL ANOMALIES (E.G. IGNEOUS INTRUSION, HOT SPRING). INDIVIDUAL EFFECTS HAVE BEEN EVALUATED ONLY FOR IDEALIZED AND SIMPLE SITUATIONS USING ANALYTICAL SOLUTIONS. THIS STUDY WILL ENABLE ONE TO CONSIDER NUMERICALLY THE NET EFFECT OF ONE OR MORE PERTURBING FACTORS ON THE SURFACE HEAT FLOWS IN A THREE-DIMENSIONAL REGION. TRANSIENT AND STEADY TEMPERATURE AND HEAT FLOW WILL BE CALCULATED AND DISPLAYED GRAPHICALLY. THE APPLICABILITY OF THE TECHNIQUE WILL BE DEMONSTRATED IN AREAS WITH DENSE HEAT FLOW MEASUREMENTS, SUCH AS THE EAST MESA, CALIFORNIA, THE RIO GRANDE RIFT, NEW MEXICO, AND MARYSVILLE, MONTANA.

*****

00000519
PROJECT TITLE:
METHANE FERMENTATION OF FEEDLOT WASTES
PROJECT NUMBER:
AER74(03573 -NSF)
INVESTIGATORS:
R. A. RHODES
RESEARCH INSTITUTION:
U.S. DEPT. OF AG., NORTHERN REGIONAL RES. CENTER
1815 N. UNIVERSITY ST.
PEORIA, IL 61604
PRIMARY SPONSOR:
NATIONAL SCIENCE FOUNDATION, DIV. ADV. EN. RESOURCES RES.
PRIMARY FUNDING AMOUNT:
FY 75 - 149,000
TIME FRAME:
06 01 75 TO 04 31 76
LOCATION:
NE IL
APSTRACT:

THE MAJOR OBJECTIVES OF THIS RESEARCH ARE TO EVALUATE THE FEASIBILITY OF CONVERTING CATTLE FEEDLOT WASTES TO METHANE GAS AND TO RUMINANT FEEDSTOCKS BY MEANS OF ANAEROBIC FERMENTATION.

AN EXPERIMENTAL FACILITY CAPABLE OF PROCESSING 350 LBS./ DAY OF FEEDLOT WASTES WILL BE CONSTRUCTED AT THE MEAT ANIMAL RESEARCH CENTER OF THE USDA AT CLAY CENTER, NEBRASKA. FEEDING EXPERIMENTS USING ANAEROBIC FERMENTER RESIDUES WILL BE CONDUCTED USING BOTH SHEEP AND CATTLE. PROCESS PERFORMANCE INCLUDING GAS PRODUCTION VALUES WILL BE EVALUATED FOR VARIOUS OPERATING POLICIES.

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00000520
PROJECT TITLE:
SOLAR ENERGY FOR GRAIN DRYING IN NORTH CENTRAL REGION
PROJECT NUMBER:
0042522
INVESTIGATORS:
T. L. THOMPSON; G. H. FOSTER
RESEARCH INSTITUTION:
UNIV. OF NEBRASKA, AG. EXP. STATION
LINCOLN, NE 68508
PRIMARY SPONSOR:
U.S. AG. RESEARCH SERVICE , KANSAS-NEBRASKA AREA
TIME FRAME:
07 01 75 TO 06 30 76
LOCATION:
NE KA
APSTRACT:

OBJECTIVE: DETERMINE, THROUGH MATHEMATICAL MODELING AND COMPUTER SIMULATION, THE FEASIBILITY AND RELATIVE EFFECTIVENESS OF USING SOLAR ENERGY AS SUPPLEMENTAL HEAT FOR GRAIN DRYING IN THE VARIOUS STATES AND LOCATIONS WITHIN THE NORTH CENTRAL REGION.

APPROACH: ADAPT EXISTING COMPUTER MODELS FOR SIMULATION OF LOW-TEMPERATURE GRAIN DRYING TO INCLUDE INPUT OF HEAT FROM SOLAR ENERGY. OBTAIN WEATHER AND SOLAR DATA

FOR SELECTED POINTS IN THE NORTH CENTRAL STATES AND CONVERT INTO FORM COMPATABLE WITH THE SIMULATION MODEL. RUN SIMULATED DRYING TESTS WITH VARIOUS LEVELS OF HEAT ADDED IN PROPORTION TO HISTORICAL RECORD OF WEATHER CONDITIONS AND AVAILABILITY OF SOLAR ENERGY FOR THE SELECTED LOCATIONS. DETERMINE MINIMUM AIRFLOW RATES, AND/OR DRYING TIMES THAT WILL PERMIT DRYING OF GRAIN FROM VARIOUS INITIAL MOISTURE LEVELS WITHOUT EXCESSIVE DETERIORATION.

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0000521
PROJECT TITLE:
TOTAL ABSORPTANCE CORRELATIONS FOR SEMITRANSPARENT SOLIDS
ROJECT NUMBER:
ENG75-17728 (NSF)
NVESTIGATORS:
E. E. ANDERSON
ESEARCH INSTITUTION:
SOUTH DAKOTA SCHOOL OF MINES & TECH.
GRADUATE SCHOOL
RAPID CITY, SD 57701
RIMARY SPONSOR:
NATIONAL SCIENCE FOUNDATION, DIV. OF ENGINEERING
RIMARY FUNDING AMOUNT:
FY 76 - 71,700
IME FRAME:
08 01 75 TO 01 31 77
OCATION:
SD
BSTRACT:

AN EXPERIMENTAL AND ANALYTICAL STUDY WILL BE UNDERTAKEN TO DEVELOP CORRELATIONS FOR THE TOTAL ABSORPTANCE PROPERTY OF SEMITRANSPARENT SOLIDS. THE DEVELOPMENT OF THESE CORRELATIONS WILL SIMPLIFY THE ANALYSIS OF RADIANT HEAT TRANSFER WITHIN SOLIDS SUCH AS GLASS, URANIUM DIOXIDE AND OTHERS. THE SIGNIFICANCE OF THE INTERNAL RADIANT EXCHANGE IN APPLICATIONS SUCH AS GLASS PROCESSING, HIGH TEMPERATURE SOLAR COLLECTORS AND NUCLEAR REACTOR MELTING ACCIDENTS CAN THEN BE MORE READILY AND REALISTICALLY EVALUATED. FUNCTIONAL FORMS FOR THE CORRELATIONS WILL BE DEVELOPED BY ANALYSIS OF SPECTRAL ABSORPTION COEFFICIENT MODELS IN A MANNER SIMILAR TO THAT PRESENTLY USED FOR GASES AND LIQUIDS. SIMPLER APPROXIMATE CORRELATIONS WILL ALSO BE INVESTIGATED USING TECHNIQUES SUCH AS THE RADIATIVE TRANSFER EXPONENTIAL APPROXIMATION. EXPERIMENTAL RESULTS WILL BE UTILIZED TO FIND UNDETERMINED PARAMETERS OR FUNCTIONS WITHIN THE CORRELATIONS AND TO VERIFY THE CORRELATIONS. ADDITIONAL VERIFICATION WILL BE PROVIDED BY COMPARISON OF HEAT TRANSFER ANALYSIS USING THE CORRELATION TO ANALYTICAL AND EXPERIMENTAL RESULTS AVAILABLE IN THE LITERATURE OF THIS FIELD.

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CC000522
PROJECT TITLE:
SITING OF WIND-POWER INSTALLATIONS
INVESTIGATORS:
R. N. MERONEY
RESEARCH INSTITUTION:
COLORADO STATE UNIV., CIVIL ENG. DEPT.
FORT COLLINS, CO 80521
PRIMARY SPONSOR:
NATIONAL SCIENCE FOUNDATION
COLORADO SCHOOL OF MINES, RESEARCH INSTITUTE
PRIMARY FUNDING AMOUNT:
1975 - 65,000
TIME FRAME:
03 01 75 TO 03 01 76
LOCATION:
CO WY
ABSTRACT:

THE OBJECTIVE OF THIS RESEARCH IS TO INCREASE TECHNICAL CAPABILITY TO LOCATE FAVORABLE WIND-SYSTEM SITES, REDUCE UNCERTAINTY IN THE PREDICTION OF VALIDATION OF THE CHARACTERISTICS OF SITES, AND ASSIST THE SIZING AND PERFORMANCE PREDICTION OF WIND SYSTEMS. THE RESEARCH WILL INCLUDE LOW-SPEED AERODYNAMICS OVER TERRAIN, BOUNDARY-LAYER FLOW CONDITIONS OVER RIDGES AND IN VALLEY EXITS TO MOUNTAIN BARRIERS, APPLICATION OF MODELING AND ANALYTICAL TECHNIQUES, AND SIMILAR RESEARCH AREAS. THE FLUID DYNAMICS AND DIFFUSION LABORATORY AT COLORADO STATE UNIVERSITY HAS UNIQUE EXPERIENCE AND EQUIPMENT IN THE USA FOR PURPOSES OF ATMOSPHERIC MODEL BUILDING. COLORADO AND WYOMING REPRESENT REGIONS FOR FAVOURABLE SITE LOCATION AS PROPOSED BY NATIONAL STUDIES OF LATENT WIND-POWER POTENTIAL. PAST EXPERIENCE WITH LARGE POWER MILLS INDICATES THAT THE SINGLE MOST IMPORTANT FACTOR CONTROLLING SUCCESS OR FAILURE OF THESE SYSTEMS IS SITE SELECTION. MOVEMENT OF THE SYSTEM ONLY A FEW MILES MAY DROP PERFORMANCE TO 1/5 OF ORIGINAL PREDICTIONS.

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CC000523
PROJECT TITLE:
GEOLOGY OF YELLOWSTONE THERMAL AREAS
PROJECT NUMBER:
9720-00325
INVESTIGATORS:
L. J. MUFFLER

RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
345 MIDDLEFIELD RD.
MENLO PARK, CA 94025
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 75 TO 06 30 76
LOCATION:
WY
ABSTRACT:

STATE TO WHICH PROJECT PERTAINS: WY.
OVERALL GOAL IS A GEOLOGIC UNDERSTANDING OF THE HOT-SPRINGS SYSTEMS OF YELLOWSTONE PARK AS PART OF A PROGRAM INCLUDING PROJECTS 9720-00322 (WHITE, KEITH), 9710-00292 (FOURNIER), AND 9710-00304 (TRUESDELL). SPECIFIC OBJECTIVES ARE: A. PETROLOGIC STUDY OF A 6,500 FEET OF DRILL CORE OBTAINED IN 1967-1969, WITH EMPHASIS ON THE HYDROTHERMAL MINERALS PRODUCED BY INTERACTION OF WATER UP TO 250 DEGREES C WITH RHYOLITE. B. DETERMINATION OF THE PARAGENESIS AND COMPOSITIONAL RANGES OF HYDROTHERMAL MINERALS AND AN EVALUATION OF FACTORS THAT MAY HAVE CONTROLLED PARAGENESIS AND COMPOSITION. C. GEOLOGIC MAPPING OF HOT-SPRING BASINS AT 1:24,000 AND 1:2,400 EMPHASIZING THE NATURE OF THE HOT-SPRINGS DEPOSITS AND ALTERATION PRODUCTS, STRUCTURAL CONTROLS OF THE HOT-SPRINGS, RELATIONSHIPS OF THE GEOLOGY AND PETROLOGY TO THE CHEMISTRY OF HOT-SRINGS.

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00000524
PROJECT TITLE:
GEOCHEMICAL INDICATORS
PROJECT NUMBER:
9710-00304 (USGS)
INVESTIGATORS:
A. H. TRUESDELL
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
345 MIDDLEFIELD RD.
MENLO PARK, CA 94025
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 75 TO 06 30 76
LOCATION:
WY CA NE ID OR
ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: WY, CA, NV, ID, OR.
THIS PROJECT WILL ATTEMPT TO ESTABLISH GEOCHEMICAL INDICATORS WHICH WILL ALLOW ESTIMATES OF THE SUBSURFACE EXTENT, CONTINUITY, TEMPERATURE, AND COMPOSITION OF GEOTHERMAL SYSTEMS.
STUDIES CONTINUE ON THE STRUCTURE AND COMPOSITION OF LOW AND HIGH TEMPERATURE AQUEOUS SOLUTIONS AND THEIR EQUILIBRIA WITH MINERALS.

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00000525
PROJECT TITLE:
THERMAL WATERS
PROJECT NUMBER:
9720-00322
INVESTIGATORS:
D. E. WHITE
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
345 MIDDLEFIELD RD.
MENLO PARK, CA 94025
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 75 TO 06 30 76
LOCATION:
WY CA OR NV
ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: WESTERN STATES, ESPECIALLY WY, CA, NV AND OR.
CONTINUE STUDIES IN YELLOWSTONE PARK WITH EMPHASIS ON ACTIVE HYDROTHERMAL PROCESSES (ORIGIN OF WATERS, DISSOLVED CONSTITUENTS, CONVECTIVE HEAT FLOW, WATER-ROCK INTERACTION). CONTINUE STUDIES OF THERMAL AND MINERAL FLUIDS THAT BEAR ON THE ORIGIN OF HYDROTHERMAL ORE DEPOSITS (AU, AG, SB, HG, OF STEAMBOAT SPRINGS, NEVADA; HG OF SULPHUR BANK NEVADA; HIGH-METAL GEOTHERMAL BRINES OF IMPERIAL VALLEY, CA). CONTINUE TO APPLY OUR FINDINGS TO UTILIZATION OF GEOTHERMAL RESOURCES.

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00000526
PROJECT TITLE:
PASSIVE SEISMIC EXPLORATION FOR GEOTHERMAL SOURCES
PROJECT NUMBER:
9930-01495
INVESTIGATORS:
P. L. WARD
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
345 MIDDLEFIELD RD.
MENLO PARK, CA 94025

PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
WY AZ CA HI
ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: AZ, WY, CA, HI. THE PURPOSE OF THIS PROJECT IS TO DEVELOP AND UTILIZE METHODS FOR DETERMINING THE SUBSURFACE STRUCTURE AND PHYSICAL PROPERTIES OF ROCKS IN THE CRUST UNDER POTENTIAL GEOTHERMAL AREAS PRIMARILY THROUGH PASSIVE SEISMIC TECHNIQUES UTILIZING A 96 ELEMENT ARRAY OF SEISMOMETERS AND A FIELD SEISMIC DATA PROCESSING SYSTEM. STUDIES WILL INVOLVE PRIMARILY LOCATING ZONES OF HIGH EARTHQUAKE ACTIVITY AND REGIONS OF SEISMIC WAVE DELAY AND HIGH ATTENUATION. AREAS OF PRIMARY INTEREST IN 1975 AND 1976 ARE YELLOWSTONE PARK, WYOMING, LONG VALLEY AND THE GEYSERS AREAS OF CALIFORNIA, KILAUEA VOLCANO, HAWAII, AND THE SAN FRANCISCO PEAKS AREA OF ARIZONA.

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CC000527
PROJECT TITLE:
A REVIEW OF ALTERNATE ENERGY SOURCES
INVESTIGATORS:
A. G. FLETCHER
RESEARCH INSTITUTION:
UNIV. OF NORTH DAKOTA, DEPT. OF CIVIL ENG.
GRAND FORKS, ND 58201
PRIMARY SPONSOR:
NORTH DAKOTA STATE WATER COMMISSION
PRIMARY FUNDING AMOUNT:
1975 - 73,954
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
ND
ABSTRACT:

TECHNOLOGICALLY ADVANCED NATIONS CONSUME LARGE QUANTITIES OF ENERGY. TO SUPPLY THIS ENERGY, SEVERAL OF THE MOST EASILY PRODUCED AND MOST EASILY CONSUMED ENERGY RESOURCES ARE BEING DEPLETED. CONSEQUENTLY, INTEREST HAS INCREASED CONCERNING UTILIZATION OF OTHER LESS CONVENTIONAL ENERGY RESOURCES INCLUDING GEOTHERMAL, SOLAR, SUBSTITUTE NATURAL GAS AND LIQUID FUELS FROM COAL, OIL SHALE AND TAR SANDS. THIS REPORT SUMMARIZES THE PRESENT STATUS OF THESE AND OTHER ALTERNATIVE SOURCES. MANY OF THESE SOURCES HOLD FANTASTIC PROMISE - WIND ENERGY ALONE COULD SUPPLY ALL OF THE ELECTRICAL NEEDS OF THE MIDWEST STATES; GEOTHERMAL ENERGY COULD SUPPLY ALL OF THE ELECTRICAL REQUIREMENTS OF THE U.S., AND SEA POWER COULD SUPPLY THE WHOLE WORLD'S ELECTRICAL NEEDS. CURRENTLY ONLY A FRACTION OF THE SOLAR ENERGY REACHING THE EARTH IS UTILIZED AND ONLY AS THE ENERGY STORED BY PLANTS. IF NUCLEAR FUSION IS FINALLY DEVELOPED, AN ENERGY SOURCE WHICH IS NEARLY INEXHAUSTIBLE WOULD BE AVAILABLE. HOWEVER, FOR THE NEAR AND MIDTERM FUTURE, OILSHALE, TAR SAND, COAL GASIFICATION AND LIQUEFACTION, AND IMPROVED ENERGY CONVERSION METHODS WILL HAVE TO SUPPLY THE NECESSARY ENERGY. TO INSURE AN ADEQUATE SUPPLY OF ENERGY, MUCH RESEARCH, DEVELOPMENT AND COMMERCIALIZATION IS REQUIRED. WITH PRESENT TECHNOLOGY, MOST ALTERNATE SOURCES WILL RESULT IN GENERALLY INCREASED COSTS TO THE CONSUMER.

TYPE OF STUDY:
PART OF 'WEST RIVER STUDY,' NORTH DAKOTA STATE WATER COMMISSION
REPORTS AND PUBLICATIONS:
FINAL REPORT AND APPENDICES. WEST RIVER STUDY: ANALYSIS OF ALTERNATIVES FOR DEVELOPING AND MANAGING WEST RIVER AREAS, WATER AND RELATED LAND RESOURCES. NORTH DAKOTA STATE WATER COMMISSION, 1975.

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00000528

PROJECT TITLE:

EFFECTS OF WARM WATER DISCHARGES ON FISH IN THE MISSOURI RIVER

PROJECT NUMBER:

F-4-R-19

INVESTIGATORS:

C. R. WALLACE

RESEARCH INSTITUTION:

NEBRASKA GAME & PARKS COMMISSION, RESEARCH DIV.
LINCOLN, NE 68503

PRIMARY SPONSOR:

NEBRASKA PUBLIC POWER DISTRICT
OMAHA PUBLIC POWER DISTRICT
NEBRASKA GAME & PARKS COMMISSION

PRIMARY FUNDING AMOUNT:

1974 - 41,000 ; 1975 - 41,000

TIME FRAME:

04 01 74 TO 12 30 75

LOCATION:

MO NE

ABSTRACT:

THIS JOB IS TO MONITOR ANY CHANGES IN TOTAL FISHES, SPECIFIC FISH POPULATIONS AND/OR FISH MOVEMENT RESULTING FROM COOLING WATER DISCHARGED INTO THE MISSOURI RIVER BY TWO NUCLEAR POWER PLANTS.

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00000529

PROJECT TITLE:

METEOROLOGICAL EVALUATION FOR PRELIMINARY STITING STUDY FOR A NUCLEAR POWER PLANT

PROJECT NUMBER:

SRI-03-3911-003

INVESTIGATORS:

J. L. GULINSON

RESEARCH INSTITUTION:

SOUTHWEST RESEARCH INSTITUTE
APPLIED PHYSICS
SAN ANTONIO, TX 78284

PRIMARY SPONSOR:

KAISER ENGINEERING

PRIMARY FUNDING AMOUNT:

PROPRIETARY

TIME FRAME:

05 01 74 TO 10 31 74

LOCATION:

NE TX

ABSTRACT:

EVALUATE, FROM EXISTING CLIMATOLOGICAL DATA, 35 CANDIDATE SITES FOR POSSIBLE LOCATION OF A NUCLEAR POWERED GENERATING PLANT ACCORDING TO SUITABILITY FROM A METEOROLOGICAL STAND POINT.

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00000530
PROJECT TITLE:
CODY 1 DEGREE X 2 DEGREE QUADRANGLE
PROJECT NUMBER:
9530-00863
INVESTIGATORS:
W. G. PIERCE
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
345 MIDDLEFIELD RD.
MENLO PARK, CA 94025
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
WY
ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: WY.

THE PROJECT OBJECTIVE IS TO ASSEMBLE THE MOST UP TO DATE AND ACCURATE PUBLISHED AND UNPUBLISHED GEOLOGIC MAP DATA AVAILABLE FOR THE CODY 1 DEGREE X 2 DEGREE QUADRANGLE AND PREPARE IT FOR PUBLICATION AT A SCALE OF 1:250,000.

THE QUADRANGLE COVERS AN AREA OF 7,000 SQUARE MILES WHICH EXTENDS FROM THE EASTERN BOUNDARY OF YELLOWSTONE NATIONAL PARK EASTWARD ACROSS THE ABSAROKA MOUNTAINS AND THE BIGHORN BASIN TO THE WESTERN FLANK OF BIGHORN MOUNTAINS IN THE NORTHEAST CORNER OF THE AREA. THE SHOSHONE NATIONAL FOREST, OUR OLDEST, WHICH COVERS ROUGHLY THE WESTERN QUARTER OF THE AREA IS UNDERLAIN LARGELY BY VOLCANIC ROCKS. THE BIGHORN BASIN, WHICH COVERS THE CENTRAL AND EASTERN PART OF THE QUADRANGLE, IS A STRUCTURAL AND TOPOGRAPHIC BASIN FILLED WITH TERTIARY AND OLDER SEDIMENTARY ROCKS. IT HAS EXTENSIVE AREAS OF STREAM TERRACES AND PEDIMENTS, AND MANY OF THEM ARE UNDER IRRIGATION. APPROXIMATELY 90 PERCENT OF THE QUADRANGLE IS FEDERAL LAND. IT CONTAINS LARGE RESOURCES OF OIL AND GAS IN 18 PRODUCTIVE FIELDS. THE LARGE REFINERY AND MAIN OFFICES OF THE HUSKY OIL CO. ARE AT CODY. SOME SULPHUR HAS BEEN MINED AND SULPHUR IS PRODUCED IN QUANTITY AT AN EXTRACTION PLANT IN THE AREA WHICH PROCESSES THE HIGH-SULPHUR CRUDE OIL PRODUCED IN THE BASIN. A BED OF GYPSUM 100 FEET THICK IS MINED FROM AN OPEN CUT 5 MILES SOUTH OF CODY AND PROCESSED INTO SHEET-ROCK BOARD AT A MODERN PLANT AT CODY. BENTONITE HAS BEEN MINED NORTH OF CODY AND THERE ARE THICK BEDS OF BENTONITE ON THE EAST SIDE OF THE QUADRANGLE. THIN BEDS OF COAL HAVE BEEN MINED, BUT ARE NOT NOW WORKED. GOLD, SILVER, LEADS COPPER AND MOLYBDENUM HAVE BEEN REPORTED IN THE SUNLIGHT AND STINKING WATER MINING REGIONS, IN THE WESTERN PART OF THE AREA.

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00000531
PROJECT TITLE:
STRATIGRAPHIC ANALYSIS OF TERTIARY URANIUM BASINS OF WYOMING
PROJECT NUMBER:
9440-01078
INVESTIGATORS:
D. A. SEELAND
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
DENVER, CO 80225
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
WY UT
ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: WY, UT.

TERTIARY BASINS OF WYOMING (SHIRLEY, WIND RIVER, POWDER RIVER, GREAT DIVIDE) CONTAIN ABOUT 35 PERCENT OF THE URANIUM ORE RESERVES OF THE NATION. THIS PROJECT WILL ATTEMPT TO DETERMINE GUIDES TO NEW URANIUM DEPOSITS BY RELATING PRESENTLY KNOWN OCCURRENCES IN WYOMING BASINS TO DEPOSITIONAL ENVIRONMENTS AND TECTONIC HISTORY. CRITERIA WILL BE DEVELOPED TO RECOGNIZE THE VARIOUS ENVIRONMENTS OF DEPOSITION IN THE OUTCROP AND IN DRILL-HOLE LOGS. SEDIMENTARY STRUCTURES, PARTICULARLY CROSS-BEDDING, WILL BE STUDIED TO HELP UNDERSTAND THE DEPOSITIONAL AND TECTONIC HISTORIES OF THE BASINS.

THE SEDIMENTARY BASIN MODELS SHOWING THE RELATIONSHIP OF SEDIMENTARY ENVIRONMENTS TO URANIUM DEPOSITS WILL BE APPLIED TO OTHER TERTIARY BASINS IN THE ROCKY MOUNTAIN REGION SUCH AS THE BIG HORN AND UINTA BASINS.

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00000532
PROJECT TITLE:
MINERAL RESOURCES - TETON WILDERNESS AND DU NOIR STUDY AREA
PROJECT NUMBER:
9370-00825
INVESTIGATORS:
J. C. ANTWEILER
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, BRANCH OF EXPLORATION RES.

DENVER, CO 80225

PRIMARY SPONSOR:

U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.

TIME FRAME:

07 01 74 TO 06 30 75

LOCATION:

WY

ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: WY.

PROJECT OBJECTIVES ARE MINERAL AND GEOTHERMAL RESOURCE APPRAISAL OF THE TETON WILDERNESS, WYOMING, THE DU NOIR STUDY AREA EAST OF THE WILDERNESS, AND THE TETON CORRIDOR WEST OF THE WILDERNESS. COMMODITIES KNOWN TO OCCUR IN OR NEAR THE AREA ARE GOLD, GYPSUM, PHOSPHATE, AND COAL. BECAUSE OIL AND GAS FIELDS HAVE BEEN FOUND IN THE NEARBY WIND RIVER AND BIG HORN BASINS, THE THICK SEQUENCES OF OF SEDIMENTARY ROCKS AND WELL-DEVELOPED ANTICLINAL STRUCTURES IN THE TETON WILDERNESS MUST BE CAREFULLY STUDIED. MOREOVER, THE PROXIMITY OF THE AREA TO THERMAL AREAS NEAR YELLOWSTONE NATIONAL PARK SUGGESTS THAT A GEOTHERMAL POTENTIAL COULD EXIST.

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00000533

PROJECT TITLE:

BADWATER CREEK-COPPER MOUNTAIN URANIUM, WYOMING

PROJECT NUMBER:

9440-00196

INVESTIGATORS:

R. E. THADEN

RESEARCH INSTITUTION:

U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
DENVER, CO 80225

PRIMARY SPONSOR:

U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.

TIME FRAME:

07 01 74 TO 06 30 75

LOCATION:

WY

ABSTRACT:

STATES TO WHICH PROJECT PERTAINS: WY.

THE BADWATER CREEK-COPPER MOUNTAIN AREA INCLUDES THE NORTHERN FLANK OF THE WIND RIVER BASIN AND THE MOUNTAIN CHAIN BOUNDING THE BASIN. THE MOUNTAINS ARE FAULT UPLIFTED ON THE SOUTH SIDE. THE CORE OF THE MOUNTAINS CONSISTS PRINCIPALLY OF W-PRECAMBRIAN ANPHIBOLITIC METASEDIMENTARY ROCKS AND INTRUSIVE QUARTZ MONZONITIC THAT HAVE YIELDED MINOR AMOUNTS OF COPPER, TUNGSTEN, NIOBIUM, TANTALUM, BERYLLIUM, AND REPORTEDLY, GOLD, AND CURRENTLY YIELD FELDSPAR FOR CERAMIC AND ABRASIVE USES. THE PRECAMBRIAN IS PARTLY OVERLAIN, AND BOUNDED, BY CAMBRIAN TO TERTIARY SEDIMENTARY AND MINOR VOLCANIC ROCKS. THE CRETACEOUS YIELDS OIL AND GAS. THE TERTIARY WIND RIVER FORMATION HAS YIELDED COAL, AND CURRENTLY YIELDS URANIUM ELSEWHERE IN THE BASIN. THE WAGON BED FORMATION HAS YIELDED URANIUM WHERE IT WAS DEPOSITED OVER AN EROSIONAL SURFACE DEVELOPED ON FAULTED PRECAMBRIAN TO TERTIARY ROCKS. STUDIES ARE BEING MADE ON THE CONFIGURATION OF THE BURIED TOPOGRAPHY AND ON THE FAULTS THAT DEVELOPED DURING UPLIFT OF THE MOUNTAINS AND DURING THE COMPACTION CAUSED BY SUBSIDENCE OF THE BASIN. BOTH THE FAULTS AND THE COMPACTION ARE BELIEVED TO HAVE CONTROLLED THE LEVEL AND FLOW OF POSSIBLE URANIUM-BEARING GROUND WATERS. REPORTS, MOSTLY DETAILED GEOLOGIC MAPS, ARE IN AN ADVANCED STAGE OF PREPARATION.

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C0000534

PROJECT TITLE:
TWO MILLION MILE GASOHOL ROAD TEST

INVESTIGATORS:
W. A. SCHELLER

RESEARCH INSTITUTION:
UNIV. OF NEBRASKA, DEPT. OF CHEMICAL ENG.
LINCOLN, NE 68508

PRIMARY SPONSOR:
NEBRASKA AG. PRODUCTS INDUSTRIAL UTILIZATION COMMITTEE

TIME FRAME:
09 01 74 TO 04 31 75

LOCATION:
NE

ABSTRACT:
AT THE PRESENT TIME A TESTING PROGRAM IS BEING CONDUCTED TO EVALUATE THE PERFORMANCE OF 10% BLEND OF ANHYDROUS ETHANOL IN UNLEADED GASOLINE USING 10 HALF-TON PICKUP TRUCKS AND 26 PASSENGER CARS. THE ANTICIPATED DURATION OF THE TEST IS 15 MONTHS AND APPROXIMATELY 2 MILLION MILES. THE CONTROL FUEL IS UNLEADED GASOLINE. THE OBJECTIVES OF THIS ROAD TEST PROGRAM ARE TO OBTAIN THE FOLLOWING INFORMATION: 1. THE QUANTITATIVE EFFECT ON FUEL CONSUMPTION OF ADDING 10% ANHYDROUS ETHANOL TO UNLEADED GASOLINE MEETING SPECIFICATIONS FOR SALE AFTER JUNE 30, 1974. 2. THE QUANTITATIVE EFFECT OF THIS ETHANOL ADDITION ON CYLINDER WEAR. 3. THE QUANTITATIVE EFFECT OF THIS ETHANOL ADDITION ON EXHAUST GAS COMPOSITION. 4. THE QUALITATIVE EFFECT OF THIS ETHANOL ADDITION ON THE ENGINE VALVES, SPARK PLUGS, AND THE EXHAUST SYSTEM. 5. THE DRIVERS COMMENTS ON THE EFFECT OF THIS ETHANOL ADDITION ON GENERAL VEHICLE PERFORMANCE. ODOMETER READINGS AND THE QUANTITY OF FUEL ADDED ARE RECORDED AT EACH TANK FILLING. EVERY 90 DAYS THE SPARK PLUGS ARE INSPECTED VISUALLY AND THE COMPRESSION IS CHECKED ON ALL TEST VEHICLES. IN ADDITION, ON 10 OF THE VEHICLES THE HEADS ARE REMOVED, THE VALVES AND VALVE SEATS ARE INSPECTED, AND THE DIAMETERS OF THE CYLINDERS ARE MEASURED. FROM ANOTHER GROUP OF 10 VEHICLES, THE EXHAUST SAMPLES ARE TAKEN ON ONE VEHICLE EACH WEEK AND ANALYZED WITH A HIGH RESOLUTION MASS SPECTROMETER. FUEL CONSUMPTION DATA IS PROCESSED WITH THE AID OF A COMPUTER INCLUDING EFFECTS FOR AVERAGE DAILY TEMPERATURE, AVERAGE RELATIVE HUMIDITY, MAINTENANCE SCHEDULE, DRIVER, AND THE VEHICLE. THE TEST HAS BEEN DESIGNED TO PROVIDE A ±9% CONFIDENCE LIMIT ON FUEL CONSUMPTION.

REPORTS AND PUBLICATIONS:
1. W. A. SCHELLER. 'AGRICULTURAL ALCOHOL IN AUTOMOTIVE FUEL-GASOHOL.' PROC. 9TH NAT'L. CONF. ON WHEAT UTILIZATION RESEARCH, PP 38-42, AG. RES. SERV. PUB. W-19, SEPT. 1974, USDA, ALBANY, CALIFORNIA 94710; 2. W. A. SCHELLER AND B. J. MOHR. 'GRAIN ALCOHOL-PROCESS, PRICE AND ECONOMIC INFORMATION.' DEPT. OF CHEM. ENGR., UNIV. OF NEBRASKA, LINCOLN, NE 68508, JUNE 1974.

*****

C0000535

PROJECT TITLE:
COMPUTER MODELING TO MAXIMIZE WATER USE EFFICIENCY AND REDUCE ENERGY IN IRRIGATION

PROJECT NUMBER:
A-038-NEB (OWRT)

INVESTIGATORS:
J. R. GILLEY

RESEARCH INSTITUTION:
UNIV. OF NEBRASKA, DEPT. OF AGRICULTURAL ENGINEERING
LINCOLN, NE 68508

PRIMARY SPONSOR:
U.S. DEPT. OF INTERIOR, OFFICE OF WATER RESEARCH & TECH.

PRIMARY FUNDING AMOUNT:
FY 75 - 6,000

TIME FRAME:
01 01 75 TO 12 31 75

LOCATION:
NE

ABSTRACT:
SPECIFIC PROJECT OBJECTIVES ARE: 1. DEVELOP AN IMPROVED MATHEMATICAL MODEL FOR SCHEDULING THE TIME AND AMOUNT OF IRRIGATION, USING CLIMATE, SOIL PROPERTIES, PLANT GROWTH DYNAMICS AND SYSTEM CAPABILITIES; 2. USE THE MODEL TO DETERMINE THE IRRIGATION RESOURCE REQUIREMENTS AND PRODUCTION RESPONSE FOR SELECTED CROPS SUCH AS CORN, ALFALFA, SUGAR BEETS AND DRY BEANS, AND TO EVALUATE ALTERNATIVE METHODS OF IRRIGATED WATER APPLICATION; 3. USE THE MODEL TO INTERPRET IRRIGATION PRODUCTION RESPONSE STUDIES IN TERMS OF ECONOMIC AND ENERGY REQUIREMENT CRITERIA AND DETERMINE THE OPTIMUM ENTERPRISE COMBINATION THAT MAXIMIZES PROFIT OR MINIMIZES RESOURCE REQUIREMENTS; 4. USE THE MODEL TO COMPARE REAL-TIME SCHEDULING TO PROBABILISTIC SCHEDULING AND NORMAL IRRIGATION PROCEDURES; 5. DEVELOP SIMPLIFIED IRRIGATION SCHEDULING MODELS FOR USE IN EXTENSION PROGRAMS; AND 6. DEVELOP DESIGN CRITERIA FOR IRRIGATION SYSTEM CAPACITY. MODELS OF EVAPOTRANSPIRATION DEVELOPED BY ROSENBERG, IRRIGATION SCHEDULING MODELS DEVELOPED BY JENSEN AND HEERMAN, CROP GROWTH MODELS DEVELOPED BY SPLINTER AND ROOT GROWTH MODELS DEVELOPED BY HUCK WILL BE BROUGHT TOGETHER TO DEVELOP AN OVERALL WATER DEMAND MODEL. FIELD RESEARCH RESULTS FROM UNL EXPERIMENT STATIONS LOCATED AT MEAD, TRYON AND SCOTTSBLUFF WILL BE USED TO

VERIFY MODEL ACCURACY.

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C0000536

PROJECT TITLE:

SURVEY OF ENERGY USE AND CONSERVATION BY THE EXECUTIVE BRANCH OF THE STATE OF SOUTH DAKOTA

INVESTIGATORS:

M. R. SMITH

RESEARCH INSTITUTION:

SOUTH DAKOTA OFFICE OF ENERGY POLICY
CAPITOL BLDG.
PIERRE, SD 57501

PRIMARY SPONSOR:

SOUTH DAKOTA OFFICE OF ENERGY POLICY

PRIMARY FUNDING AMOUNT:

FY 75 - 5,000

TIME FRAME:

08 01 74 TO 12 31 74

ABSTRACT:

SURVEY OF ENERGY CONSUMPTION WITHIN THE EXECUTIVE BRANCH OF THE STATE OF SOUTH DAKOTA. SURVEY INCLUDES TYPES OF FUEL USED AND THE RELATIVE EFFICIENCIES OF THE VARIOUS ENERGY SYSTEMS. CONSERVATION MEASURES INITIATED DURING THE 1973-74 HEATING SEASON ARE EVALUATED AND FURTHER ENERGY CONSERVATION MEASURES ARE SUGGESTED.

*****

00000538
PROJECT TITLE:
HOLTER LAKE, MONTANA
PROJECT NUMBER:
9530-00574
INVESTIGATORS:
G. D. ROBINSON
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
345 MIDDLEFIELD RD.
MENLO PARK, CA 94025
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
MT
ABSTRACT:
STATES TO WHICH PROJECT PERTAINS: MONTANA.
TO COMPLETE AND REPORT ON DETAILED GEOLOGIC MAPPING OF 2 7 1/2-MINUTE QUANDRANGLES AT THE JUNCTION BETWEEN THE MONTANA DISTURBED BELT AND THE CENTRAL MONTANA UPLIFT, FOR THE BROAD PURPOSE OF PROVIDING BACKGROUND INFORMATION ON STRUCTURE AND STRATIGRAPHY OF VALUE IN THE SEARCH FOR NEW MINERAL AND FUEL DEPOSITS IN THIS PROMISING BUT POORLY UNDERSTOOD REGION.

*****

00000539
PROJECT TITLE:
PILOT STUDY - ECOGEOLOGY HELENA REGION, MONTANA
PROJECT NUMBER:
9530-00865
INVESTIGATORS:
R. G. SCHMIDT; G. D. ROBINSON
RESEARCH INSTITUTION:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
12201 SUNRISE VALLEY DR.
HERNDON, VA 22092
PRIMARY SPONSOR:
U.S. GEOLOGICAL SURVEY, GEOLOGIC DIV.
TIME FRAME:
07 01 74 TO 06 30 75
LOCATION:
MT
ABSTRACT:
STATES TO WHICH PROJECT PERTAINS: MONTANA.
THE HELENA ECOGEOLOGY PROJECT IS CONCERNED WITH A STUDY OF THE GEOLOGY AND NATURAL RESOURCES OF A 3,000-SQUARE-MILE AREA IN WESTERN MONTANA CENTERED AROUND THE CAPITAL CITY OF HELENA. THE REGION EMBRACES A REMARKABLE RANGE OF GEOLOGIC PHENOMENA-BATHOLITHS, PLUTONS, GREAT THICKNESSES OF SEDIMENTARY AND VOLCANIC STRATA, BEDROCK AND PLACER ORE DEPOSITS, COMPLEX STRUCTURAL HISTORY, ACTIVE FAULTS--AND IS SUBJECT TO A WIDE ARRAY OF GEOLOGIC HAZARDS AND ENVIRONMENTAL PROBLEMS. THE PRIMARY AIM OF THE PROJECT IS TO COLLECT GEOLOGIC, GEOPHYSICAL, AND HYDROLOGIC DATA ON THE REGION THAT WILL SERVE AS A FACTUAL BASE FOR LAND-USE PLANNING. THE FIRST WORKING OBJECTIVE IS TO PREPARE STANDARD GEOLOGIC MAPS OF THE REGION AT A SCALE OF 1:250,000 AND OF HELENA AND ITS ENVIRONS AT A SCALE OF 1:48,000. A SERIES OF INTERPRETIVE MAPS ARE THEN TO BE PRODUCED, BASED PARTLY ON THE GEOLOGIC MAPS AND PARTLY ON SPECIALIZED STUDIES, THAT DEAL WITH PROBLEMS SUCH AS EARTHQUAKE HAZARDS, AREAS OF SUBSIDENCE, SEASONAL FLOODS, GEOCHEMICAL CONTAMINATION, AND GROUND-WATER POLLUTION AND FACTORS SUCH AS THE AVAILABILITY OF CONSTRUCTION MATERIALS, DISTRIBUTION OF MINERAL DEPOSITS, SURFACE WATER AND GROUNDWATER SUPPLIES, GEOTHERMAL HEAT, UNDERGROUND STORAGE OF NATURAL GAS, AND UNDERGROUND WASTE DISPOSAL. OTHER TOPICS WILL BE ANALYZED AS REGIONAL NEEDS AND RESOURCES BECOME BETTER KNOWN.

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*GX SIGNIFIES PROJECTS OF GENERAL APPLICABILITY NOT GEOGRAPHICALLY BOUND TO A STATE

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ORGANIZATION INDEX

ARIZONA PUBLIC SERVICE CO.
00000448

BASIN ELECTRIC POWER COOPERATIVE
00000426 00000446 00000449 00000463

BECHTEL CORP.
00000464

BRISCOE, MAPHIS, MURRAY, LAMONT, INC.
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BURLINGTON NORTHERN, INC.
00000486

BURNS & MCDONNELL
00000461

CENTAUR MANAGEMENT CONSULTANTS, INC.
00000476

CENTRAL MONTANA DIST. 6 COUNCIL
00000445

COLORADO SCHOOL OF MINES, RESEARCH INSTITUTE
00000522

COLORADO STATE UNIV.
00000477

COLORADO STATE UNIV., CIVIL ENG. DEPT.
00000522

CONSOLIDATION COAL CO.
00000458

CONTINENTAL OIL CO.
00000497

CORMORANT CORP.
00000457

CROW OFFICE OF COAL RESEARCH
00000475

CROW TRIBE
00000443

C. PATTON & ASSOC.
00000395

C.E.R. GEONUCLEAR CORP.
00000497

DECKER COAL CO.
00000456

ECOLOGY CONSULTANTS, INC.
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ELECTRIC POWER RESEARCH INSTITUTE
00000442

ENERGY TRANSPORTATION SYSTEMS, INC.
00000464

HITTMAN ASSOCIATES, INC.
00000444

IDAHO POWER CO.
00000395

J. T. BANNER & ASSOCIATES, INC.
00000463

KAISER ENGINEERING
00000529

MATHEMATICA, INC.
00000444

MID-YELLOWSTONE AREAWIDE PLANNING ORGANIZATION
00000439

MONTANA BUREAU OF MINES & GEOLOGY
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MONTANA COLLEGE OF MINERAL SCIENCES AND TECHNOLOGY
00000488 00000489 00000490

MONTANA COLLEGE OF MINERAL SCIENCES & TECHNOLOGY FOUNDATION
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MONTANA DEPT. OF FISH AND GAME
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MONTANA DEPT. OF HEALTH & ENVIRONMENTAL SCIENCES
00000465

MONTANA DEPT. OF NATURAL RESOURCES & CONSERVATION
00000425 00000428 00000429 00000447

MONTANA DEPT. OF STATE LANDS, RECLAMATION DIV.
00000408

MONTANA ENERGY ADVISORY COUNCIL
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MONTANA ENERGY & MHD RESEARCH & DEVELOPMENT INST.
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MONTANA STATE UNIV., COOP. FISHERY RESEARCH UNIT
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00000453

NATIONAL SCIENCE FOUNDATION, DIV. OF ENGINEERING
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NATIONAL SCIENCE FOUNDATION, DIV. OF ENVIRONMENTAL SCIENCES
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00000396 00000421 00000433 00000492 00000499

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SOIL WATER
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00000516 00000521

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00000515 00000516 00000520 00000527

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00000422 00000468 00000469 00000472

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00000427 00000439 00000444 00000445 00000447 00000457 00000474 00000477

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00000469 00000485 00000490

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00000426 00000446 00000528

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00000400 00000415 00000441 00000449 00000452 00000461 00000467 00000488

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00000406 00000445

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00000394 00000397 00000531 00000533

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00000403 00000442 00000450 00000499

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00000448 00000461

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00000409 00000410 00000411 00000435

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00000426 00000435 00000446

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00000407 00000430 00000491

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00000433

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00000406 00000408 00000412 00000415 00000420 00000425 00000426 00000432 00000433 00000446 00000447
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00000409 00000410 00000411 00000412 00000418 00000420 00000422 00000425 00000426 00000431 00000432
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00000399 00000403 00000408 00000412 00000452 00000477 00000478 00000499 00000528 00000539

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YELLOWSTONE RIVER BASIN
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